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# Railway Age

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Vol. 89

August 30, 1930

No. 9

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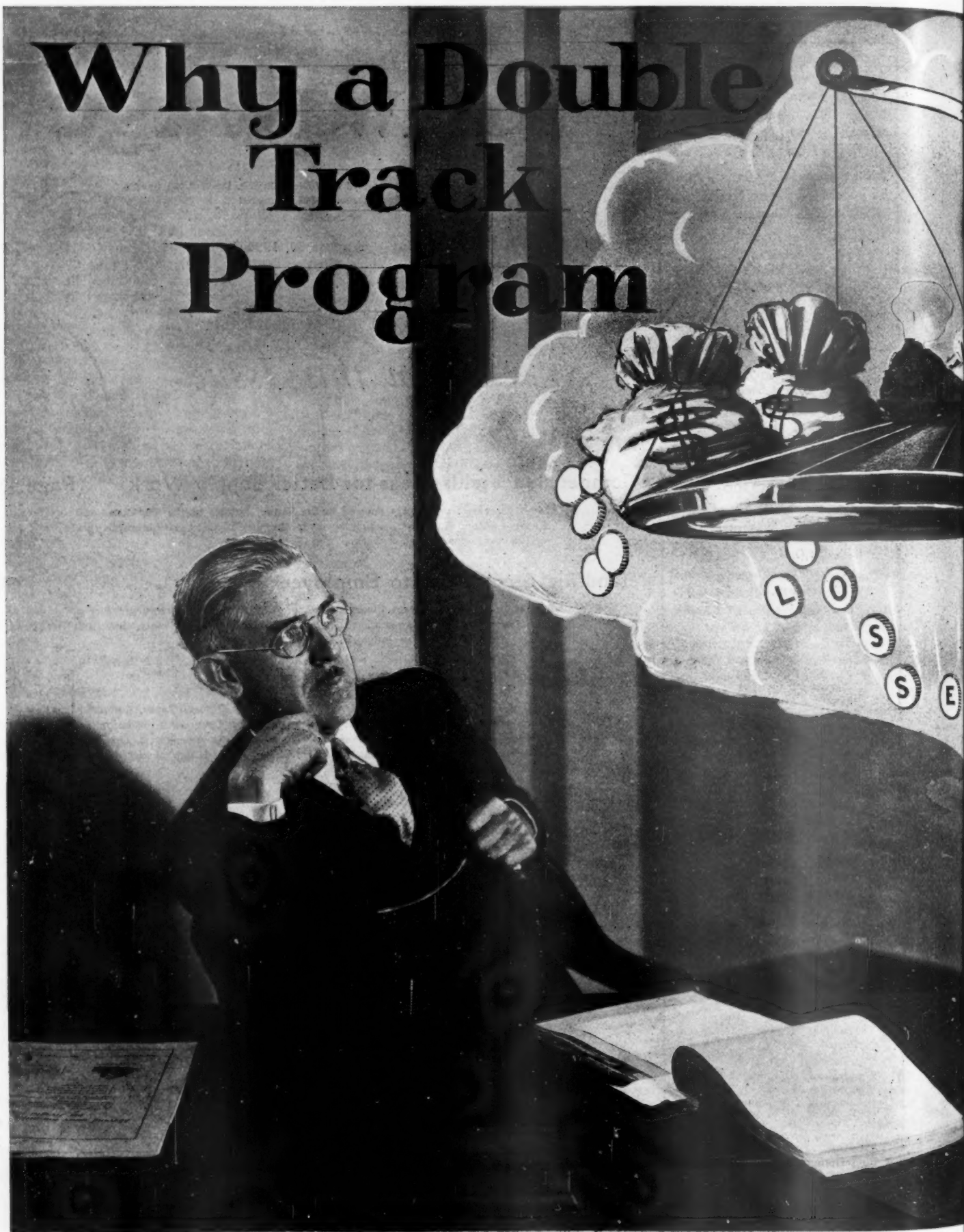
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# Why a Double Track Program



## *District Offices*

NEW YORK

MONTREAL

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# Railway Age

Vol. 89, No. 9

August 30, 1930

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## Proposed Revision of Section 15-A

ON behalf of the National Industrial Traffic League, R. C. Fulbright, chairman of its Legislative committee, has written a letter to Senator Couzens advocating the revision of Section 15-A of the Transportation act, and, at the same time, opposing the Howell bill. Section 15-A contains the rate-making provisions which assure the railways opportunity to earn a fair return on a fair valuation. The Howell bill would change these provisions principally by substituting "rate bases" for valuations. The proposed rate bases would be made substantially in accordance with the commission's decision in the O'Fallon case, and therefore would not give weight to present cost of reproduction in valuations, as required by the Supreme court.

Mr. Fulbright, who is a successful lawyer who participates principally in proceedings under the Interstate Commerce act, takes the position that the Howell bill would not establish a lawful basis for the regulation of rates. "It is thought", he says, "that the courts will no doubt look through the form of the bill to the substance and will see that this so-called rate base is merely adopted as a substitute for value and will hold that it is subject to all of the legal objections which were found to apply to the decision of the commission in the St. Louis & O'Fallon case."

### Objections to Section 15-A

The National Industrial Traffic League, by Mr. Fulbright as its spokesman, does, however, attack Section 15-A as economically unsound and submits provisions of its own as substitutes for it. The principal objection advanced against Section 15-A is that it definitely assures a fair annual return upon the aggregate valuation of each group of roads, and that they can be given this return, and, at the same time restricted to it, only by advancing rates in periods of depression when traffic declines and reducing them in periods of prosperity when traffic increases. It is difficult to take this criticism seriously. Section 15-A directs the commission to so adjust rates that, "as nearly as may be," the carriers will earn fair annual return. This plainly does not mean, and no spokesman of the railways ever has claimed that it does mean, that they are entitled to a fair return in each year, and that rates should be moved up and down with fluctuations in traffic. Railway officers know that any such policy of rate-making would

be economically unsound and impracticable. What has been contended is that rates should be so made that, while the railways will earn less than a fair return in poor years, they will earn more than a fair return in good years, and that, on the average, over periods of years, they will get a fair return. Section 15-A has been in effect for ten years, and no effort has been made to get rates moved up and down with fluctuations of traffic. Furthermore, in not a single year have the railways earned a fair return, measured by any standard.

The return contemplated by Section 15-A would be a "fair return on a fair valuation", as defined by the Supreme court. While, however, the railways are entitled to a fair return if it can be earned by charging "just and reasonable rates", they are not legally entitled to charge excessive rates even to get a fair return. Under the legislation proposed by the National Industrial Traffic League rates would be so adjusted that the railways would "under honest, efficient and economical management and reasonable expenditures for maintenance of way, structures, and equipment, have opportunity to earn an average annual net railway operating income sufficient, as nearly as may be, to pay the interest on funded and other outstanding indebtedness and to provide such return upon the properties devoted to public use as shall in the judgment of the commission maintain a proper basis of credit to enable the carriers as a whole to meet the transportation needs of the country". \* \* \* "In determining the amount of net railway operating income which the public interest requires that carriers shall have opportunity to earn, the commission shall consider, among other things, the requirements of commerce for improvements and extensions of carrier property and the cost of obtaining capital therefor, the net estimated value of the properties devoted to public use, the level of rates and charges under which a free movement of the various commodities may be fostered and preserved", etc. This would leave the commission a very wide discretion in determining the amount of net operating income the railways were entitled to earn. Unlike Section 15-A, it would not require that the specified return should be a "fair return upon a fair valuation". At the same time, it would not relieve the commission of the duty of finishing its valuation and keeping it up-to-date, because



without valuations it could not know the "net estimated value of the properties".

### *Repeal of Recapture Provisions*

In addition, the legislation proposed by the National Industrial Traffic League would repeal the recapture provisions of the Transportation act and make the repeal retroactive to 1920. It is hard to think of any reasonable argument against the proposed repeal of the recapture provisions. They were based upon the assumption that the railways as a whole or by groups would be allowed to earn a fair return upon a fair valuation, which the commission held would be  $5\frac{3}{4}$  per cent. As the carriers have never earned such a return in any year, and may not in future, it would be unjust to recapture earnings from those which in one or more years have happened to earn more than six per cent.

As to the rate making provisions of Section 15-A, we are unable to see how their repeal as proposed by the National Industrial Traffic League would help the shipping public, and we do believe that it would do serious injury to the railways. Under the law shippers always have been and always will be entitled to rates that are not burdensome to traffic. Under Section 15-A the railways are assured that under rates that are not excessive, and under honest, efficient and economical management, the commission will at least try to give them opportunity to earn as an average what each road is constitutionally entitled to earn—viz., a fair return upon a fair valuation. Under the legislation proposed by the National Industrial Traffic League they would have opportunity to earn only such return "as shall, in the judgment of the commission, maintain a proper basis of credit that will enable the carriers as a whole to meet the transportation needs of the country". The commission's judgment regarding this matter already is well-known. It is that the railways do not need and should not have the return to which the Supreme court holds they are constitutionally entitled. Therefore, the passage of the National Industrial Traffic League's bill would be tantamount to a declaration by Congress that the Interstate Commerce Commission should not even seek to give the railways that to which they are constitutionally entitled.

### *Condition of Railway Credit*

Not long ago it was being said that the credit of the railways had been restored. The steady decline that is now occurring in the prices of their stocks as a result not only of the very poor earnings they are now making, but also of the unsatisfactory earnings they made in 1929, when they handled a record-breaking freight business, shows that their credit is rapidly declining. The passage by Congress of a bill in effect directing the commission to regulate them in future according to its own judgment and regardless of their constitutional rights could not fail to give a serious blow to their credit. It would be more just for the government to acquire the railways and operate them itself than to regulate them in that way.

For ten years Section 15-A has completely failed to accomplish its purpose of enabling the railways to earn a fair return on a fair valuation. This has been due to the commission's policy of regulation, to government-subsidized competition by other means of transportation, to excessive competition between the railways themselves, and to various causes which have reduced the growth of freight traffic. Meantime, the carriers, hoping for more satisfactory earnings, have greatly improved their service, principally by raising and investing large amounts of capital. They are earning in 1930 the smallest percentage of return upon property investment since 1921, and their managers are looking to the future with much concern, principally because of grave doubts as to the amount of traffic they will have to handle when business revives. It is difficult to understand how the intelligent industrial traffic managers who compose the National Industrial Traffic League can at such a time advocate legislation which would be correctly interpreted as withdrawing from the Interstate Commerce Commission the directions given in Section 15-A to at least try to regulate the railways in accordance with their constitutional rights as defined by the Supreme court.

## Yard Air Lines

THERE has been considerable discussion of late as to the advisability, from a transportation standpoint, of air lines in yards, the general trend of opinion, seemingly, being unfavorable. In fact, in some terminals, installations already in service have been abandoned as uneconomical in actual operation.

Despite the unfavorable reaction in some quarters, air lines in yards still have active supporters, who claim that trains may be prepared for leaving the yard much quicker by the use of air lines than without them. It is a noticeable fact that, in a number of yards, where fast movement and rush traffic must be periodically handled, air lines are in use; for example, in a grain-handling yard in Canada, and a perishable-handling yard in Georgia, through which a large volume of Florida fruit and vegetables moves. In both these cases, as well as in most of the others referred to, the terminals could get along quite well without the air lines for the greater portion of the year; nevertheless, the installations are regarded as a justifiable expense because of the increased speed with which it is possible to get a train ready during the periods of rush and seasonal traffic. In both of the yards specifically cited, however, the air lines are well located, evidently as the result of advance study for the purpose of determining how the greatest benefit might be obtained from the installations.

It would seem impossible, therefore, to state categorically whether the yard air lines are a benefit. Certainly, in the two cases mentioned, as well as in several others, the operating officers are not misleading them-



selves in stating that the air lines permit of more rapid handling through the yard. It would seem equally certain that, in other cases, yard air lines already installed would not have been abandoned if the officers had not been convinced of their futility in those particular places.

The answer to the question seems to depend upon the needs of each individual yard, assuming that in each case the yard air line is properly located. Under the circumstances, however, and in view of the evidence both for and against air lines, it should not be assumed, without study, that, because they are a benefit in one yard on a railway, they would be equally beneficial in another yard. Equally, because they do not benefit one yard, it should not be assumed that they are valueless everywhere.

## Superintendents Visit Scenes of Accidents

A BUSY division superintendent stated recently that he supervises the clearing up of every derailment or other accident on his division, regardless of the time or place. This does not mean that he attempts to usurp the prerogatives of the wrecking foreman, but merely that he is on hand for general supervision and for making important decisions, if necessary. His is a relatively short division, comprising only some 300 miles of track, and every part of it is readily accessible to his headquarters by passenger train or automobile. Nevertheless, this statement is indicative of a changing attitude toward derailments.

Formerly, the clearing of accidents was supervised by the wrecking foreman, sometimes with the assistance of the roadmaster, but higher officers were seldom present. There were, of course, exceptions to this general practice, but too often the superintendent stayed in his office and bombarded the men on the ground with telegrams, inquiring why they were not clearing the main line more quickly.

The superintendent's responsibilities have increased largely in the last few years. Nevertheless, many superintendents are finding time to visit the scenes of accidents and supervise relief operations wherever it is at all possible to do so. With transportation geared up to its present state of efficiency and freight schedules at their present speed, interruptions to the smooth flow by accidents are much more important than they used to be. When freight trains are scheduled at from 30 to 45 miles an hour, they cannot linger long behind a derailment and still make the expected on-time arrival.

Not only are superintendents and trainmasters now being found on the scene in increasing numbers, despite the demands on their time by other affairs, but the Missouri Pacific goes a step farther in that it also sends a freight claim prevention man to supervise the salvage of the freight, a procedure that has proved highly profitable.

## Loss of Passenger Earnings

IF the passenger business of the railways declines as much in proportion throughout 1930 as it did during the first one-half of the year the number of passengers carried by them will be the smallest in 25 years, or since 1905; the number of passengers carried one mile will be the smallest since 1907, and their passenger earnings will be the smallest since 1916. As compared with 1929, the number of passengers carried has declined about 5½ per cent, the number of passengers carried one mile almost 9 per cent, and passenger earnings almost 11 per cent. On this basis, passenger earnings for the year will be less than \$780,000,000, or almost \$100,000,000 less than in 1929.

Railway passenger business reached its maximum in 1920. Its rapid and steady growth until 1920, and its rapid decline since then, mark perhaps the most extraordinary change that ever has occurred in the history of railroad transportation in the United States. Assuming that passenger business throughout 1930 will be relatively as small as during the first half of the year, both traffic and earnings will be about 40 per cent less than in 1920. Passenger earnings in 1920 were about \$1,305,000,000, and in 1930 will be about \$525,000,000 less than this. The decline in passenger earnings since 1920 is costing railways as much annually as would a 12 per cent reduction in all existing freight rates.

As has been frequently pointed out, most of the passenger business lost has been taken by private automobiles, but a large and increasing part of it has been taken by motor coaches. The railways have adopted various methods to hold their traffic, but, as the statistics demonstrate, most of these have been ineffective. Practically all the traffic lost has been day coach business, as in years of active general business the trend of travel in sleeping and parlor cars has been upward, although it has declined this year.

Study of the loss of traffic to motor coaches has convinced many railway officers that the principal reason for it is that motor coach fares usually are lower than ordinary railway fares. This is causing much consideration of the question as to whether the railways should not adopt a policy of selling both first class and second class tickets, the first class tickets to be sold at the present rates and to be good only in sleeping and parlor cars, and the second class tickets to be sold at rates substantially lower than those now charged and to be good only in day coaches. The policy of furnishing first and second, and even third and fourth class services at widely differing rates long has prevailed on the railways of Europe. It has been contended that travelers in the United States could not thus be divided into classes, but by their use of motor coaches to take advantage of lower fares travelers in this country already to a large extent have divided themselves into two classes.

Regardless of the causes and remedies, the huge loss of passenger business from which the railways are suffering has been one of the most important factors in increasing the difficulty of the nation's railroad problem.



*This Small Treating Plant was Built in Connection with an Existing Storage Tank*

# New Treating Plants

*Modernization of old water stations on Northern Pacific pays 44 per cent annually on investment*

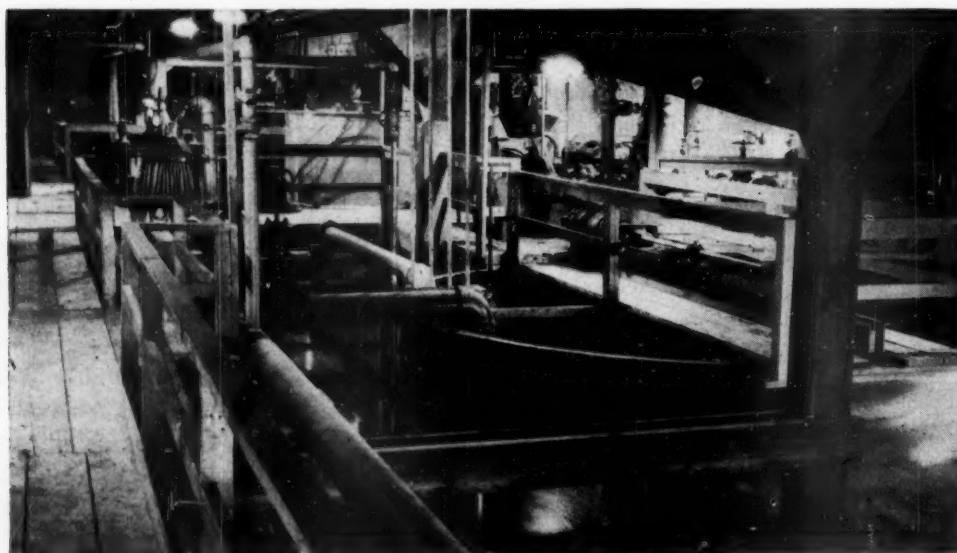
**A**N inadequate water supply, a large mileage of "bad-water" districts and a desire to effect economies in the operation of locomotives, are the principal reasons why the Northern Pacific made a complete survey of its main-line water conditions in 1924. The facts brought to light by this survey not only resulted in the establishment of a comprehensive system of water-treating plants and the modernization of existing water stations, but aided materially in solving the various problems encountered. While it is yet early to predict exact results, data so far available show an annual saving of 44 per cent on the investment for the modernization of plants and a return of 30 per cent on the investment for those water-softening plants completed prior to 1929. The latter saving was figured on the basis of the commonly accepted figure of 13 cents as measuring the damage done by a pound of scale.

The Northern Pacific follows river valleys to a large extent, and in the early days it was usually possible to secure water for railway purposes from nearby streams. In the Rocky Mountain district and in the Cascade Range, mountain streams were available, which in many

cases provided an abundance of pure water, making the only requirement a storage tank kept full continually under gravity head. Approximately 100 such supplies have been in use for many years. In the flat and more arid regions of North Dakota, eastern Montana and eastern Washington, conditions are not so favorable and resort was often had to impounding reservoirs, deep wells, or surface wells. River supplies, particularly those from the Yellowstone river, while comparatively pure at first and suitable for use when the turbidity was removed by sedimentation, have in more recent years become polluted by the inflow from irrigated districts, which tends to leach out the alkali salts from the soil of the valleys and deposit them in the streams. This has made a marked increase in the calcium and magnesium sulphates as well as the alkali sulphate content and thus has brought about the necessity for softening these supplies.

It is not more than 30 years since there was scarcely a dependable supply of any kind of water in a 200-mile district through western North Dakota, where it was necessary to supply intermediate points by regularly operating water trains of 10 to 15 cars to transport water from the Missouri or Yellowstone river. At that time it was more a problem of being able to move trains over the district than of considering the requirements of economical boiler maintenance. In one day's operation, as many as 14 crown sheets were damaged sufficiently to cause locomotive failures, and in other cases the water was so high in incrusting salts that the accumulated scale caused such leaking and other troubles that 10 hours was as long as a switch engine could be kept in continuous service without repairs. Boiler failures on the road were a common, daily occurrence. Three water-softening plants built in 1907 temporarily relieved an aggravating situation in eastern North Dakota, and additional plants now completed or contemplated will correct the entire main-line water situation.

In 1924, the management of the Northern Pacific authorized a complete survey and investigation of main-line water conditions. The railway chemical laboratory car and a business car, for use as office and living quarters, were provided as well as the services of a chemist. A committee representing the engineering and operating departments proceeded over the main line and made a complete record of the existing facilities at each water station. They noted what,



**Settling Basins for the Lime Soda Softening Plant, Forsyth, Mont.**



# Yield 30 Per Cent

By E. M. Grime

Engineer of Water Service, Northern Pacific, St. Paul, Minn.

if any, improvements were desirable and secured samples from the existing supply as well as from adjacent sources which might offer a better quality of water for locomotive use. Also, at each terminal discussions were held with the superintendent, master mechanic, road foremen and roundhouse employees to learn just what trouble was being experienced on account of scale accumulation as well as from corrosion and pitting. Boilers undergoing repairs were inspected, as were all available tubes and flues. Each day the chemist analyzed the water samples brought in. The hardness and the total solid content were then plotted to scale, forming the diagram as illustrated in part herewith.

This survey required a period of about four months, at the end of which the diagram presented a good picture of the water conditions over the entire line. Sufficient information had been collected to make a complete report with recommendations as to a water-softening program for the bad-water districts, as well as suggestions for the modernization of stations where the machinery was obsolete in type, or the supply inadequate. It was also found that by the improvement of certain key stations the operation of others could be abandoned without detriment to the service. It was found practicable to abandon the stations at Stuart, Mont., and Winston, where the waters are very bad on account of high calcium and magnesium sulphate content. At Spiritwood, N. D., where the poorest boiler water on the railroad is situated, the old supply was abandoned and arrangements were made to haul treated water from High Bridge, N. D., for, as this is an emergency station where only a limited supply is required, hauling the water proves to be more economical than treating the existing supply. It is worth noting that almost without exception our discussions with the local operating officers indicated boiler maintenance conditions corresponding in difficulty approximately with the raw water hardness shown on the diagram, leaving no doubt as to the desirability of proper water treatment.

The committee then prepared a report covering the extension of the existing treated-water district from Jamestown, N. D., to Billings, Mont., the treatment of the very bad waters in the eastern part of Washington, and the modernization of various stations on all divisions of the main line.

A three-year program was suggested for carrying out these improvements which involved an estimated cost of approximately \$600,000. This report indicated a saving, after deductions for interest and depreciation charges, of 41 per cent on the investment. As a result of this survey and report, the work was authorized practically as recommended, and in the fall of 1925 the water service department was established. Since that time the construction of water-softening plants and the modernization of other plants has gone steadily forward



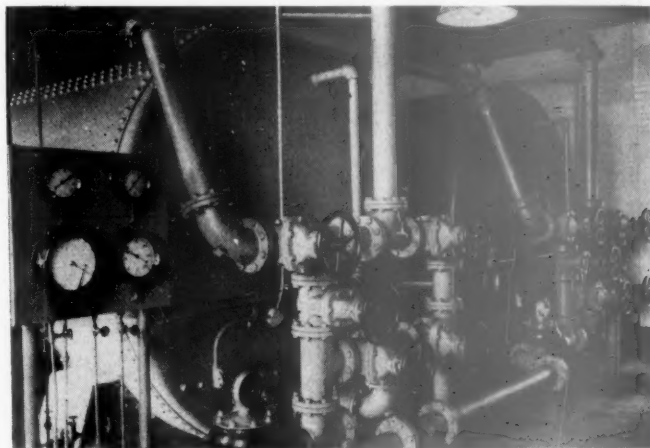
*The Small Intermittent Type of Plant at Medora, N. D., Softens Water From Three Sources*

and, with the exception of a few stations in eastern Washington, is now practically completed.

## Further Studies

While the modernization of existing stations has been a comparatively simple matter, it has been found desirable to make very thorough studies involving the entire water situation in the districts where softening plants are necessary. A modern plant of this kind, costing approximately \$1,000 per 1,000 gal. of hourly water-softening capacity, ordinarily involves such a large expenditure that it cannot justifiably be undertaken without first determining to a certainty that the water station is absolutely necessary, what the minimum and maximum water requirements are, and also that the supply is reliable or can be made so.

After a complete study of this matter and conferences with the operating officers, it was found that, as a rule, in each of the old operating districts, which were approximately 100 miles long, a softening plant should be built at each terminal, at the 50-mile intermediate coaling point, and also at a point between the coaling station and the terminal to serve local freights and for emergency use, thus giving an average spacing of 25 to 30 miles. While the diagram prepared by the water



**These Zeolite Water Softeners, Laurel, Mont., Have a Daily Capacity of 700,000 Gal.**



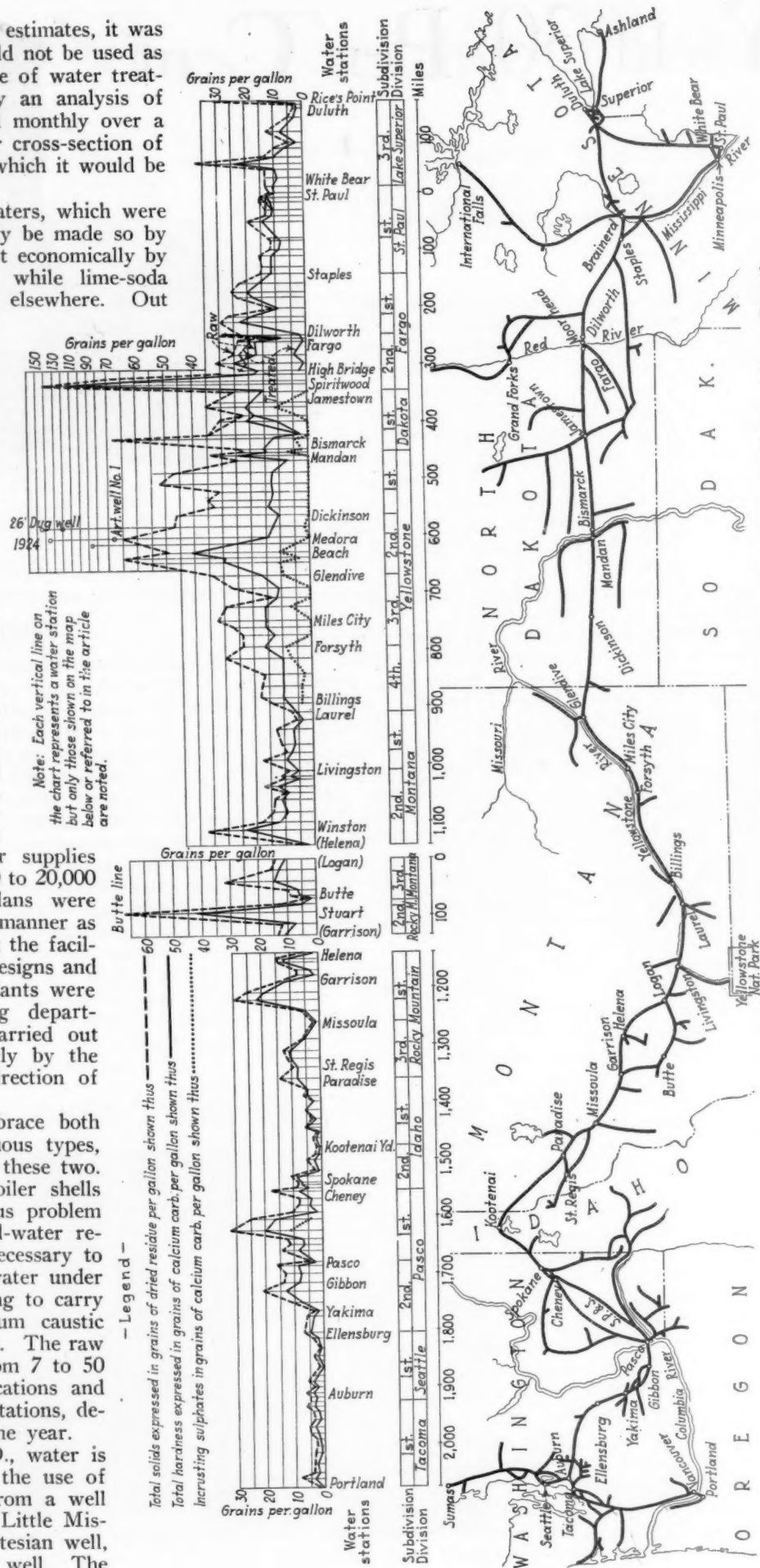
committee served as a basis for estimates, it was felt that one water analysis could not be used as a basis for determining the type of water treatment to be used. Accordingly an analysis of each water supply was secured monthly over a period of a year to give a fair cross-section of the quality of raw water with which it would be necessary to deal.

It was found that certain waters, which were uniformly clear or could readily be made so by filtration, could be purified most economically by the zeolite softening process, while lime-soda treatment was most desirable elsewhere. Out of 31 new stations, zeolite softening could be used advantageously at 6. Soft water that was practically the same as zeolite-treated water could be secured in other cases by drilling new wells, and lime-soda softening was most suitable at the remaining locations. In addition to these locomotive supplies, three small zeolite plants now built and two additional plants contemplated will provide clear water of practically zero hardness for service to passenger trains.

Before this improvement program was undertaken, the railway had expended a considerable sum for settling basins and other facilities, particularly in the Yellowstone River valley where the turbidity of the river water supplies may vary anywhere from 100 to 20,000 grains per gallon. The plans were therefore prepared in such a manner as to utilize to the fullest extent the facilities already existing. The designs and specifications for the new plants were handled by the engineering department, and the work was carried out partly by contract and partly by the railway forces under the direction of the engineering department.

The lime-soda plants embrace both the intermittent and continuous types, as well as a combination of these two. Pitting and corrosion of boiler shells and tubes has been a serious problem in the Northern Pacific bad-water regions, and therefore it is necessary to maintain treatment of the water under close chemical control, aiming to carry at all times sufficient sodium caustic alkalinity to inhibit corrosion. The raw waters vary in hardness from 7 to 50 grains per gal. at some locations and to a lesser extent at other stations, depending on the season of the year.

At Medora station, N. D., water is so scarce as to necessitate the use of three sources of supply; from a well receiving seepage from the Little Missouri river, from a deep artesian well, and from a shallow surface well. The

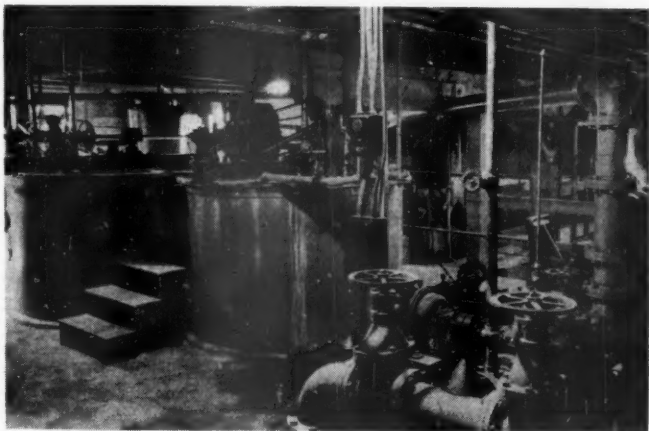


A Chart Showing the Solids and the Hardness Content of the Waters of Main Line Water Stations. These Samples Were Taken from September to December, 1924

artesian well is high in sodium bicarbonate and furnishes approximately sufficient natural soda ash to soften the high calcium and magnesium salts from the other sources.

At Beach, N. D., a new well provides an insufficient quantity for total supply, but the water does contain sufficient sodium bicarbonate to make it unnecessary to provide soda ash for softening the remainder of the supply which is taken from surface wells. The conditions at no two stations are the same and they are continually changing at practically every station, depending on the seasons and the variation in rainfall. In every case the desire has been to secure the lowest possible total salts in the treated product and at the same time the minimum hardness. In order to maintain uniform soft water conditions continuously, it is necessary for the water inspector, who is a chemist, to visit each plant in his territory at least once a week and the important terminal plants more frequently.

A record is kept of every analysis made so that the inspector may have a complete history of each particular water and thereby be in a position to prescribe accurately any changes in dosage required and at the same time use the minimum of chemicals to produce the desired results. It is usually necessary to provide



Interior of the Lime Soda Softening Plant, Forsyth, Mont., Showing the Chemical Mixing Machinery

considerable excess treatment to secure the low hardness required, and this excess is often sufficient to give the desired causticity without any additional chemical. It is desired to carry all lime-soda treated waters at not exceeding 1.5 g.p.g. hardness, and at the more important terminal plants where the intermittent process is used or where pressure filters have been installed this hardness is kept down to one grain or even less practically all of the time. Water treated in this manner is found in actual use to combine very well with zeolite-softened water at adjacent stations, which has a hardness of 0.2 to 0.5 g.p.g.

Although the most important station in the treated water district, namely, Glendive, Mont., has only recently been placed in operation, the results of clean, soft water are already shown clearly by the improved condition of the locomotive boilers so far as scale is concerned. The results are also shown by the total absence of pitting and corrosion in passenger engine boilers which have had the full benefits of treated water throughout the greater portion of their tube life. Five of these engines, which were recently shipped, have averaged more than 248,000 miles each during the last three years. They have operated in the bad-water territory in western North Dakota and eastern Montana

where heretofore the average tube life was approximately 18 to 24 months, after which the tubes were so badly pitted as to necessitate scrapping. Critical examination of the boilers of these five engines discloses no evidence of pitting or corrosion in either the tubes or the boiler shell. It is evident from this that treatment of the bad waters has brought them to substantially the same excellent quality as the soft water from Lake Superior or from the mountain districts.

## Railways to Operate Over St. Louis Municipal Bridge

**O**FFICIAL announcement was made on August 13 of the terms of the completed agreement between the city of St. Louis, Mo., and the Terminal Railroad Association of St. Louis, whereby the latter will use the Municipal bridge across the Mississippi river for passenger trains and a large amount of the freight traffic passing through the St. Louis gateway. The agreement also provides for the abandonment of the present Relay Station in East St. Louis and the construction of a new passenger station at a different location. To accommodate this traffic, the city will construct five new approaches to the bridge at a total cost of \$3,300,000. In addition, tolls will be abolished on certain classes of vehicular traffic now using the Eads bridge. The rental for the Municipal bridge will be on a wheelage basis, but the railway guarantees a minimum annual return to the city of \$500,000 which is partly offset by the payment of \$140,000 annually by the city to the railway for the abolition of Eads bridge tolls.

This agreement ends a protracted controversy of many years' standing between the city and railways over the use of the Municipal bridge, which was constructed by the city of St. Louis to compete with the Eads and Merchants bridges, both of which are controlled by the Terminal Railroad Association, in the expectation that it would eliminate the bridge differential on traffic moving between St. Louis and points east of the Mississippi river. Since its completion in 1917, it has been used as a free highway bridge, but up to the present no use has been made of the railway facilities across the structure.

The agreement, which has been signed by Mayor Miller and will later be tendered to the railway for execution, provides that, as soon as the executed contract is approved by the Board of Aldermen, which will convene on September 26, tolls will be abolished for pedestrians and for all vehicles passing over the Eads bridge, except those that are operated for hire. For this concession, the city pays the railway a lump sum of \$140,000 annually, payable out of the sums due the city for the use of the Municipal bridge. Owing to certain contracts and conditions now in effect, it was necessary to exclude vehicles operating for hire from the provisions for free passage. If these can be modified to include such vehicles, payments are to be increased to \$200,000 annually. These sums are almost exactly half of the revenue derived from this source at present.

The Terminal Railroad Association will pay to the city for the use of the Municipal bridge \$1 for loaded freight cars, 50 cents for empty freight cars, \$1.50 for passenger cars and \$2 for each locomotive passing across the structure, but guaranteeing a minimum payment of \$500,000 annually. To make the plan effective, how-

(Continued on page 450)



# Competition Yields Ideas for Better Supply Work



Southern Pacific Storekeeping

**F**OR the fourth consecutive year the younger members of railway purchasing and stores departments were given a chance to suggest how to improve railway purchasing and stores work, in a contest conducted during the year by the Purchases and Stores division of the American Railway Association. This contest, which ended in June with the presentation of the winning papers before the annual convention of the association, (reported in the *Railway Age* of June 19, 1930) produced papers from 17 railroads. Of these papers, 11 were from the Canadian National, 7 from the Southern Pacific, 5 from the Illinois Central, 3 each from the Wabash and the Erie, 2 each from the Bessemer & Lake Erie and the Kansas City Southern, and one each from the Baltimore & Ohio, the Bangor & Aroostook, the Boston & Maine, the Chicago, Milwaukee, St. Paul & Pacific, the Chicago & North Western, the Missouri Pacific, the Northern Pacific, the Pennsylvania and the Union Pacific. The authors included 4 division storekeepers, 2 local storekeepers, 6 stockmen, 7 foremen, 3 chief clerks, 12 clerks and 2 stenographers, who wrote, in the aggregate, approximately 75,000 words about their work, aspirations and problems. Stock books, stores facilities, equipment for material handling, stores delivery, reclamation and scrap handling, accounting, employee training, departmental relations, co-operation, stock control, surplus material, car loading, programming of work, line stock, rail handling, safety, pricing requisitions and ordering supplies were the topics of these papers. In several of them, plans for better results were outlined, such as the use of visible cards

## Supply Work

*Skids, visible cards, bin pricing, programs and class work among plans advanced in annual stores contest*

for stockkeeping, portable platforms for handling material and the pricing of material at the bins.

Ralph Lougee, storehouse foreman on the Erie, described the use of electric lift trucks and lift platforms, and presented the results of time studies as evidence of the value of the new methods, which the writer recommends for storing as well as receiving and shipping material, in order to conserve both time and labor in stores operations. The following excerpts are taken from Mr. Lougee's paper:

As far as practicable, company material is shipped between division stores on skids which are handled by power or hand lift trucks. Cars that formerly took six to eight hours to handle are now averaging 45 min.

Materials to be shipped from the general store to outside points are assembled on skids in each section. The small items are loaded in bulk in boxes which can be nested, and large items are placed directly in the skids. The load is tagged and transported to the car by a lift-truck operator and at the destination, the loads are moved to the racks and the material put away directly from the skids. If the material is to be used immediately, it is left on the skid. This eliminates a large amount of packing and unpacking.

### Reduce Man-hours

At one point, hexagon engine bolts are received from the manufacturer on skids. Previously they were sorted into sizes on the floor of the car in lots of about 7,500 and it took 28 man-hours to move them into the storehouse. The skid method reduced the time to 1 man-hour. Package bolts are also being received in the same manner. The manufacturer is relieved of the expense of packing and boxing, and there is nothing to be cleaned up when the bolts are unpacked.

Journal brass is received from the foundry in containers which cut the time of unloading from 32 man-hours to 1 man-hour. One store skids all brass castings weighing over 40 lb. The castings are loaded at the foundry on skids by pattern numbers, so that when a car is received the skids are placed in proper position under a stenciled rack and form an island platform. This eliminates manual handling of the castings until retailed to the shop in small quantities. The containers are returned to the foundry with old brass borings, rod brasses, journal bearings and miscellaneous brass.

At another point, the old method of handling car equalizers was to load four equalizers on a two-wheel truck and move it to a welder's bench. When welded, the equalizers were replaced on the truck, delivered to the annealing furnace, then hauled to the shaper and placed on wooden horses. When shaped to size, they were returned to the car. It took two men 60 min. or two man-hours, to do the work. With a specially made skid, eight equalizers are now handled at once, welded without being removed and taken to the annealing furnace, annealed, moved to the shaper and returned to the car. This operation requires only one man-hour, and double the load is handled.



At another point, skids are used for sorting scrap. The skids are placed by an overhead crane. Couplers, knuckles and box bolts that are suitable for reclaiming are loaded in containers set on the loading dock by the crane, then loaded into box cars and shipped to the point of reclamation. The cars are handled at destination in 2½ to 3 hr., whereas it took two days to release the car when the sorting was done under the old plan.

At another point, tubes and flues are handled by a skid and an elevating lift truck, with the result that cars are now being unloaded in six man-hours that formerly took 28 man-hours.

### Use Standard Packages

Lyman E. Field, supervisor of material standardization on the Boston & Maine, advocates the enlarged use of standard packages at the point of manufacture. The packing of groceries, he points out, has resulted in foodstuffs being more economically distributed to the consumer and, while the railway's problem may be different from that of the grocery man, the basic principles are similar. A standard package of any article should be so made up as to permit the widest possible distribution without breaking the package. This practice will reduce the number of handlings to a minimum, provide for accurate inventories and reduce damage to the material. The standard package idea should also be developed on items manufactured in the company's shops. It is no more work and requires no more time for the man finishing staybolts to put them on trays containing 6, 10 or 20 units, than to throw them into a box. The practice will reduce damage to the material and also reduce handling costs.

### A Suggestion Box for Ideas

Eustace Titt, accountant on the Canadian National, ventures the thought that the railways should stimulate more suggestions from employees. In some commercial houses, he explained, a special box is placed in a conspicuous place and employees are invited to drop written suggestions in it. The notes are carefully studied and, if an idea is adopted, the originator is notified and suitably commended and, in some cases, awarded extra compensation as a token of appreciation. One department store adopted this idea and was able to use over 80 per cent of the suggestions. In support of his claim that such a method could be adopted by the purchasing and stores organizations with beneficial results to the company, officers and employees, Mr. Titt quoted from an address before the American Federation of Labor by Sir Henry Thornton, president of the Canadian National, in which the latter, describing the co-operative shop movement on the Canadian National, stated that, since the inception of a co-operative plan in the shops, 6,358 suggestions for improving shop conditions and output were made and that 73 per cent had been accepted, 15 per cent were still under consideration and only 12 per cent had been rejected.

### Charge Interest on Idle Material

Why, asked Frederick Buntebart, storekeeper on the Grand Trunk Western, should not the various departments be assessed annually with the interest on the money tied up in the materials which are kept in stock for their use? If each department were to receive at the end of each year an assessment for the use of money tied up in material, he continued, the heads of those departments would be anxious to avoid unpleasant questions as to why their interest charges were so high and would see that all their subordinate employees ordered material carefully and avoided needless purchases. As it is now, said Mr. Buntebart, the principal department to carry the responsibility and consequences of the surplus stock

is the stores department, although most of the surplus and obsolete material accumulates through actions of the using departments in changing standards, programs of work, etc. If these departments were penalized each year, the burden of explaining the reasons for excessive stock would be shifted where it belongs.

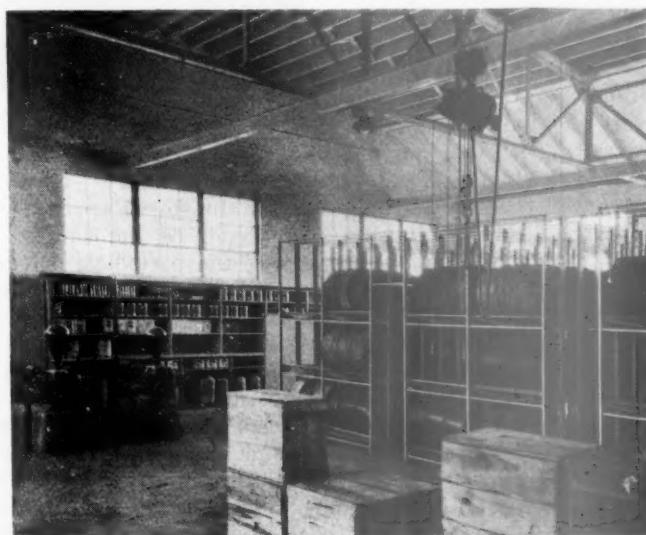
### More Accurate Stock Books

Inaccurate stock books, with inaccurate monthly inventories, are the causes of most shortages or surpluses of material, according to E. W. Lewis, assistant stores accountant on the Kansas City Southern. Some roads, continued Mr. Lewis, have partially solved this and other problems by the use of bin or shelf cards. The pricing of issues from such cards can eliminate the haphazard method of using an average price, or the last posted price in accounting, and closer inventories will result. The close checking of material that bin cards suggest would also have the psychological result of causing warehouse men and store helpers to keep a closer check on the stock. Mr. Lewis is also interested in having purchase orders written in the general storekeeper's office, explaining that the orders could take the place of requisitions and, after being made out for the material required, could be forwarded to the purchasing agent, with the result that in many cases the order could be practically completed by the general storekeeper.

### Load Scrap Iron Better

Francis Forbes, assistant general foreman of scrap and reclamation on the Erie, declares there are large savings in keeping usable material out of scrap at assembling points and insisting on the better loading of scrap at such points. As a general rule, he observed, very little thought is given to the loading of scrap by local supervisory forces. He described an instance where a car was received at the central handling yard with a locomotive cylinder buried in a tangled mass of jacket and band iron, flues, pipes and miscellaneous materials, making the unloading costly, increasing the sorting cost and actually reducing to scrap many materials in the car, which could have been reclaimed if they had been more carefully loaded.

E. L. Vandry, storekeeper on the Canadian National at Joffre, Que., also proved an advocate of a more careful regulation of the shipments of usable material in scrap. At Joffre, he explained, 34 engines are dispatched daily and 60,000 cars are handled monthly through the



An Oil Filling Station on the Santa Fe

terminal, but the co-operation between the departments in handling current repairs is such that less than 5 per cent of the total weight of scrap shipped from Joffre, including material salvaged from cars involved in derailments was in suitable condition to be reclaimed or re-issued.

### Curb Reciprocity Buying

In one of the few papers on railway purchasing, Percy G. Palmer, a clerk on the Canadian National, deplors the evils of "reciprocity buying," stating that the use of threats or promises to divert traffic from or to the railroads for the sole purpose of dictating what grades of materials the roads shall purchase and from whom they shall purchase has increased to such an extent as to be more and more of a menace to the continuance of a sound purchasing policy.

Much time and money has been spent in testing and improving the materials used by the railroads but if traffic is allowed to influence purchases to any extent, the constant creeping in of inferior materials will retard further developments and improvements. Again, if the volume of traffic offered by the largest shipper is allowed to influence purchasing, it will give the larger manufacturer an unfair advantage over smaller competitors and will eliminate the smaller manufacturer. The writer maintains that when a railroad has handled the shipper's traffic successfully, it has fulfilled its contract to the shipper and should not be under further obligation in placing orders for such materials as the shipper might have to sell. A purchasing agent will lose some friends and traffic by discouraging trading of traffic for orders, but a shipper who will divert his traffic for orders will divert it again to another carrier for the same reason whenever a similar opportunity arises.

One of the greatest bugbears for the storekeeper, says Harry L. Stamp, division storekeeper of the Chicago, Milwaukee, St. Paul & Pacific, are the periodical drives launched by the using departments. A series of hot boxes occur and a drive is made by the car department, calling for quantities of packing and brasses. A locomotive part fails and a drive is launched to replace the part in question and eliminate the possibility of future failures of the same part. The requests for materials to take care of these drives generally come simultaneously over the entire railroad and all available stocks of the material are immediately exhausted. Suddenly the drive ends and the railroad is left with an unusual amount of one kind of stock on hand with little likelihood of using it up for some time to come. The condition which caused the

drive may be corrected, but the same result might have been obtained by first checking up the amount of material needed at each point.

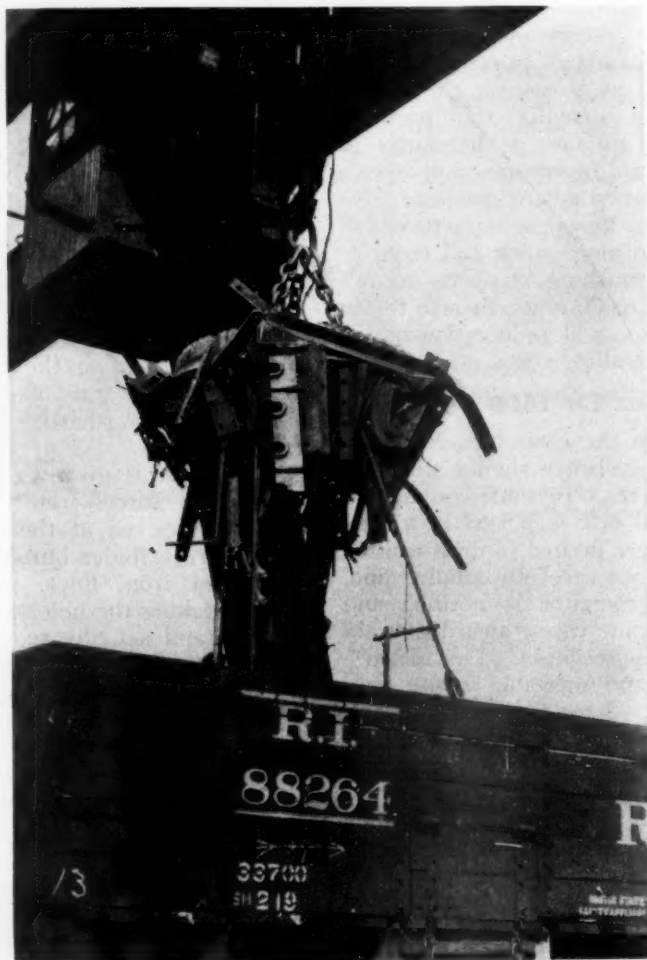
### Educate the Employee

Howard C. Lyon, clerk to the storekeeper of the Bessemer & Lake Erie, claims that the railroads would get better results in their supply work by giving more attention to the training of employees. For a number of years, he points out, the railroads have spent considerable amounts to increase the efficiency of their stores departments. Unit piling has been adopted, stocks have been concentrated into small spaces and obsolete material has been disposed of. Trucks, cranes, conveyors and other machines have been purchased to handle material more quickly, but the human machine has received little attention. At present, store department labor is largely recruited from boys who, by reason of from one to four years in high school, have had enough education to develop their mental powers, but must have special training to develop efficiently into stock men, foremen, clerks and accountants, and for the higher offices.

In another paper on the same subject, H. G. Williams, supply train storekeeper of the Wabash, suggested that circular letters of instruction should be prepared by the department and issued to all employees, and that meetings should be held where these circulars may be studied and discussed.

A. C. Wagner, division storekeeper of the Erie, stresses the programming of car repair work and its more systematic handling as an aid to the stores departments of railroads in reducing their investments in unapplied materials and supplies. Previously, the storekeepers had to carry enormous stocks to meet all requirements and, as

the requirements were never known in advance, it was often necessary to hold cars out of service until the material could be secured. Now, 100 to 1,000 cars of a certain type are picked out and a check made well in advance to determine what parts should be renewed. The material requirements are fully discussed with the storekeeper present, a pencil memorandum is prepared for all the material requirements for the total number of cars on the repair order, and a schedule made, giving the time of starting the work and the number of cars to be repaired each day. With this information, the storekeeper can prepare material requisitions and arrange for deliveries of the material to meet shop requirements. The station-to-station method of making car repairs has also done much to reduce the cost of handling material by increasing the efficiency of



Scrap Handling on the Rock Island



material delivery forces. Under the old method of shopping freight cars, the cost of handling material was exorbitant. Under the station-to-station plan, it is prearranged that a certain amount of material is always delivered to the same spot, and a more accurate knowledge of the requirements makes it possible to deliver several days' supply at one time.

#### How to Order Materials for Shop Work

Oliver D. Jones, locomotive storekeeper of the Wabash, has developed a plan for meeting the problem of supplying material for heavy locomotive repairs. The plan, which comprises a series of shop-work reports and the systematic check of these reports with the progress of the work, is described by Mr. Jones as follows:—

On all Class I railroads, the superintendent of motive power prepares a report for the government on the condition of power on the last day of each month. This statement covers every locomotive on the railroad and the number of months each can be maintained in service before being sent to a back shop. The locomotives scheduled for repairs in the first four months should show the class of repairs to be made to each locomotive at its next shopping. If the storekeeper is furnished with a copy of this report, he can easily consolidate the total number of engines by their classes and by the months in which they will be taken out of service.

later than the 20th of each month, the date of shipping and the date on which the shop expects to complete the repairs. Each stockman involved should have a copy of the engine schedule, showing the necessary wearing parts for each engine, and, as material is drawn by the shop, it should be checked off the list.

#### Roundhouse Inspection

A form should also originate in the mechanical departments covering a careful inspection of each machine at least 60 days before the shopping date. It should be made by the master mechanic or one of his staff and should describe the condition of the larger items of material which are not renewed for long intervals, such as engine cylinders, wheel centers, frame castings, deck castings, guide yokes, boiler front, smoke stack, cylinder heads, tender-truck bolsters, channel irons, firebox, engine truck wheels, trailer truck wheels, tender truck wheels, firebox syphons, tire wear, large patches or renewals of boiler plates, superheater header, side and main rods, and draw bars. The storekeeper should check the items on this report, stencil the locomotive number on the material on hand and order the balance, stipulating the date of delivery.

As a further safeguard against delaying engines due to shortages of materials after they reach the back shop, the shop superintendent should make a further inspection when the engine is stripped, check the items appearing on the first report and make the necessary additions. This will enable the storekeeper to order additional material that may be



Well-Pruned Material Stocks on the Frisco

Certain parts of locomotives wear rapidly and must be renewed at each overhauling. These parts include crosshead shoes, journal bearings, siderod bushings, main-rod bushings, valve-motion bushings, brass hub liners, journal-compound grease cakes, journal perforated plates, piston-rod packing, valve-stem packing, distributing tubes for stokers, side and hood curtains, injector tubes, arch brick and main driving-box brasses. With the information for each class of locomotive before him, the storekeeper need only order enough of the wearing parts for the locomotives that will be shopped within the period covered by his requisitions. This period largely depends on the number of days required to receive the material from the various sources.

To the items being renewed at each shopping of a locomotive, there must be added additional items which are renewed in part, such as valve rings, cylinder packing rings, grates, grate fingers, back and front-end main rod brass, piston bull rings, valve bull rings, driving-box brasses, tank hose, signal hose, air hose and stoker bushings. A study might develop that such materials would be required on a 50-per cent basis, while valve bushings, air-pump rings, air-pump gaskets, air-pump valves, cushions, arm rests, brake shoes, engine-truck brasses, trailer-truck brasses, arch flues, boiler check valves, crank pins, boiler lagging, smoke stacks, superheater bands and copper ferrules might be required only on a 25-per cent basis.

#### Shop Program

To assist in properly protecting the material requirements, the store department should be furnished, not

added and a copy should be sent to the master mechanic for comparison with his original report.

#### Material Not Covered by Inspection

The storekeeper should also study the mechanical appliances standard to the various classes of engines, and determine the number of each kind and appliance repaired each month over a period of time. With such information, the storekeeper could anticipate the needs on this class of material as carefully as though an inspection had been made and a report had been submitted.

It is the thought of G. M. Byers, chief clerk to the division storekeeper of the Erie, that railway stores could be more effectively controlled by replacing, or at least supplementing, the use of stock books by a visible card system in which markers of different colors would be used to disclose the condition of the stock at any time. The stock book, he says, is ideal for taking inventories, ordering materials, and for permanent records, but it is far from ideal for controlling the stock. The information necessary for actual stock control is buried in the stock book until a shortage or surplus exists. The following is a condensed description of a plan proposed:

A card should be prepared for each live item of stock and filed on panels and in cabinets. The visible edge of the



card should show the item number, and a brief description, and should be filed in stock-book order. Each card should also show the maximum and minimum amounts of stock to be carried, the average 10-day disbursement for a period of two years, the monthly disbursements for each month and for each quarter-year for two years, and all facts pertinent to the use or purchase of the item, such as the units needed for general repairs only, the items on which disbursements can be controlled by supervision, the protective items and materials which can be safely deferred to assist in budget control.

At each inventory period the quantity on hand, the quantity due and the file number of requisitions, the quantity disbursed during the last period and the unfilled orders should also be added.

Color signals should be used to indicate the exact status of each item. These color signals can be either metal tabs, transparent celluloid strips or blocks, or paper slips. This would be governed by the type of panel and the form of card selected. The following color signals are suggested:

Red—Supply due on order.

Yellow—Out of stock or insufficient on hand to fill orders held.

Orange—Insufficient stock on hand to protect the situation until requisitions due, are normally filled. One week after inventory date, this signal would be automatically replaced by a yellow signal, unless the supply had been received.

Green—Normal supply of material on hand.

White—Material to be delivered on or after specified dates.

Black—Material ordered for specific work or on forecasts furnished by using department.

Pink—Material to be ordered.

Brown—Material being manufactured or finished on shop orders.

Lavender—Conditions requiring attention have been observed and necessary action taken.

The signals would check the condition of the stock mechanically. A red and blue signal on the same card would indicate that orders due should be cancelled. A yellow or orange signal, without the accompanying blue signal, would indicate an impending shortage, or the same signals combined with blue and without the lavender signal, would show that no action had been taken to protect the situation.

Fast moving items should be covered by cards bearing a distinctive marking. These cards could be used to take inventories oftener than the usual monthly inventory. The space on the back of cards could be used for this purpose, or an additional supplementing card filed with the control card.

The expense of such a plan, the author points out, would be a small ratio to the benefits obtained. Surplus will be reduced, shortages largely eliminated and inventories lowered. Some of the other advantages claimed are: the reduction of the telephone and telegraph bills; the reduction of the express charges paid on supplies that should have been shipped by freight; the elimination of many items that are personally followed by executives, thus freeing them from detail and permitting more attention being given to other and more productive duties; and the reduction of the necessity of making passenger-train shipments of staple items of material between storehouses. Output will also be speeded, with a resulting decrease in the cost per locomotive or car, and equipment will be released for service at an earlier date. In addition substitutions of material will be avoided.

#### Card Records for Obsolete Material

S. J. DeGraff, stores inspector on the Southern Pacific, proposes as a solution of the problem of controlling surplus obsolete material that each railroad establish a bureau in which a card record shall be kept of all surplus and obsolete items. Each storekeeper according to Mr. DeGraff's plan, would use a standard form in furnishing a complete record of all items not moving in accordance with average monthly consumption, while a separate card would be prepared at the central bureau. In all cases, an item number would be used to identify the material in all transactions and dispense with the necessity of lengthy descriptions.

The bureau would receive copies of all requisitions for the purpose of checking them against the surplus record and would also receive notice of all proposed changes in standards. It would also devolve upon this bureau to confer with the proper department to secure the disposition of all material in these records.

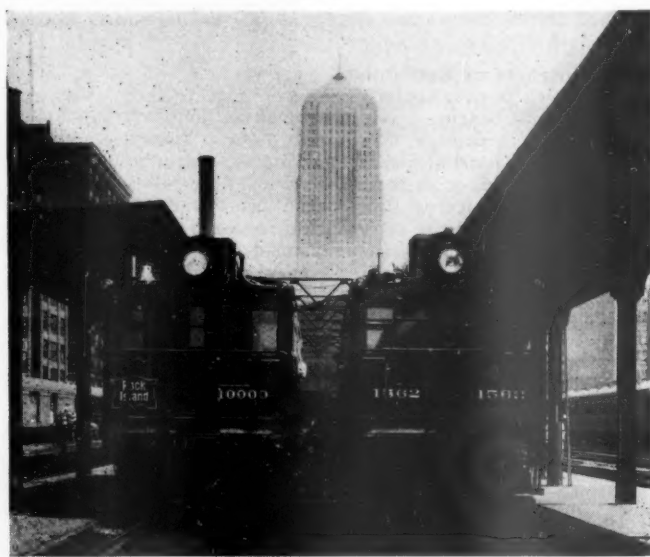
#### Plan the Rail Orders

J. C. Everts, rail and tie clerk on the Southern Pacific, refers to the millions of dollars invested annually by the railroads in new steel rails and argues that, with the heavy weights of rail that are now being used by the railroads, funds may become tied up to an unwarranted extent, unless the rail program is carefully watched. The proper plan, he states, is to purchase the rail for delivery only as it is required, so that it can be delivered from the mills direct to the work and thus save intermediate handling and interest charges. The maintenance of way department, he advances, should be able to prepare a schedule, showing, by jobs, locations and months, when all rail required on the annual program is to be laid in the track. Such information will make it possible for the purchase and stores department to organize the delivery work. The best plan is to order all the rail required for the first nine months of the program on one contract and the last quarter's requirements on a later contract to take care of unforeseen conditions which arise during the year and to afford the railroads a protection against making unnecessary purchases. A substantial saving can be made, by also arranging, as far as possible, to have the track fastenings delivered direct. Good judgment must be exercised, however, as it is an expensive operation to pick up rail and fastenings after they have once been distributed.

THE WABASH has added bedroom sleeping cars to its mid-night train between Chicago and St. Louis.

THE COMMON PLEAS COURT at Cape Girardeau, Mo., has authorized the sale of the steel on the Cape Girardeau Northern extending between Jackson, Mo., and Perryville, about 35 miles, to the Sonken Galamba Corporation, Kansas City, Mo., for \$17,000.

\* \* \*



Two of the Three Battery-Oil-Electric Switching Locomotives Installed by the New York Central and the Rock Island at La Salle Street Station, Chicago, Largely as a Means of Smoke Prevention

*Burlington Installs*

# Centralized Traffic Control

*on 24 Miles of Single Track*

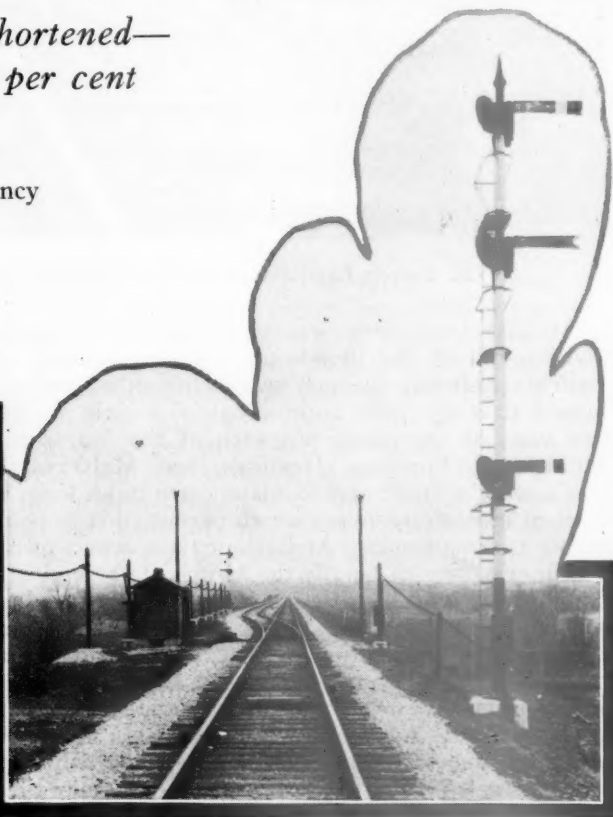
*Two interlockings eliminated—Delays shortened—  
Running time reduced—Savings of 19 per cent*

By W. F. Zane

Signal Engineer, Chicago, Burlington & Quincy



*The Centralized Control Machine at Red Oak*



*Power Switch and Signals on the End of a Siding*

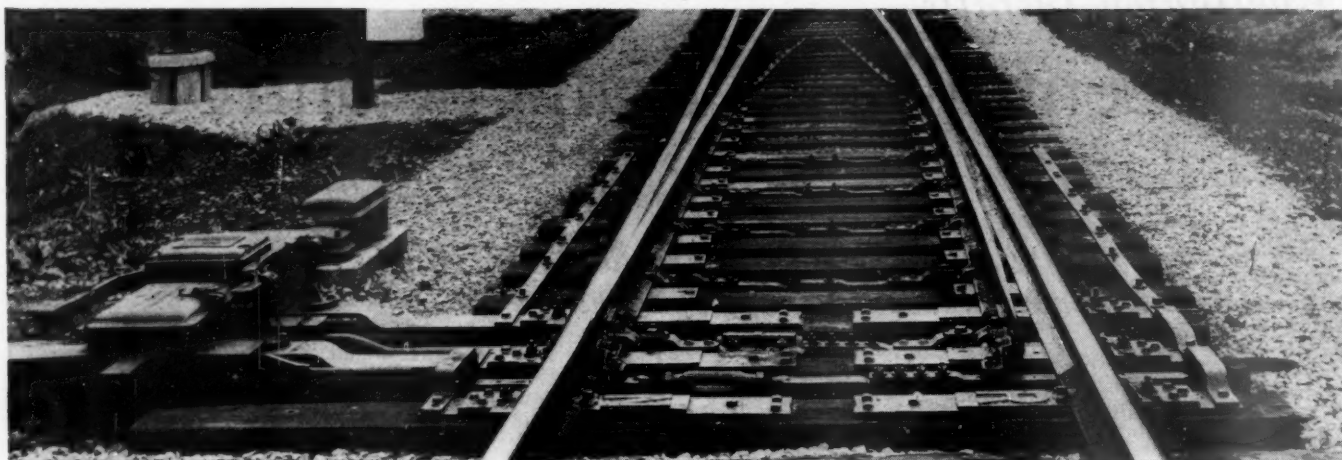
AS a means of increasing the capacity of a 24-mile section of single track between Red Oak, Iowa, and Balfour, the Chicago, Burlington & Quincy has superimposed the Union Switch & Signal Company's system of centralized traffic control on the existing automatic signals in train-control territory. Excepting for three miles in another location, this 24-mile section is the only piece of single track on the 501-mile main line between Chicago and Omaha. For years it had been the intention to construct second main track in this territory, but on account of the large expenditure required, this improvement had been postponed. Recent studies indicated that the traffic could be expedited by a centralized traffic control system at a cost of approximately one-fourth the estimated expenditure for second track, the estimated saving being about 19 per cent on the investment.

The traffic on this territory consists of high-class and frequent passenger and freight service operating on fast schedules. There are 16 passenger and about 23 freight trains daily, thus totaling approximately 39 train movements each 24 hours when traffic is heavy. The dead-freight rating over this territory is 3,300 tons and the time-freight rating is 2,300 tons. There is one

local passenger train each way daily and the remainder are operated on fast through schedules, including the Aristocrat, between Chicago and Denver, the Ak-Sar-Ben, between Chicago and Omaha-Lincoln, and two fast mail trains.

Records of train operations have been kept since this installation was placed in service on April 30, 1930, and a study of a 33-day period shows that the savings are at the rate of \$24,957 annually. This saving is shown in detail in Table I, and although based on present traffic, which is below normal, represents a return of 19 per cent on the investment for the improvements including \$100,000 for the centralized control and \$36,000 for track changes. The centralized control system has also made possible an average reduction in running time of 9 min. for westbound and 10 min. for eastbound trains, as shown in Table II. For the 358 trains operated during June, this saving in time represents a saving of approximately \$320 in wages per month. Operating results already obtained in this territory have exceeded those anticipated when the original analysis was made, and indications are that the economies effected will be further increased under heavier traffic.





The Switch Layouts are Well Constructed Using Special Strap Braces to Hold the Points in Place

At Red Oak there was a mechanical interlocking plant handling the double-track crossover and other switches including the east switch for an advance west-bound passing track approximately a mile in length just west of the plant. At each of the four stations, McPherson, Emerson, Hastings, and Malvern, there was a passing track approximately two miles long, with a set of center crossovers which permitted it to be used as two passing tracks. At Balfour there was a mechanical interlocking to handle the switch at the end of the double track and also the west switch for an advance eastbound passing track approximately 2,000 ft. long.

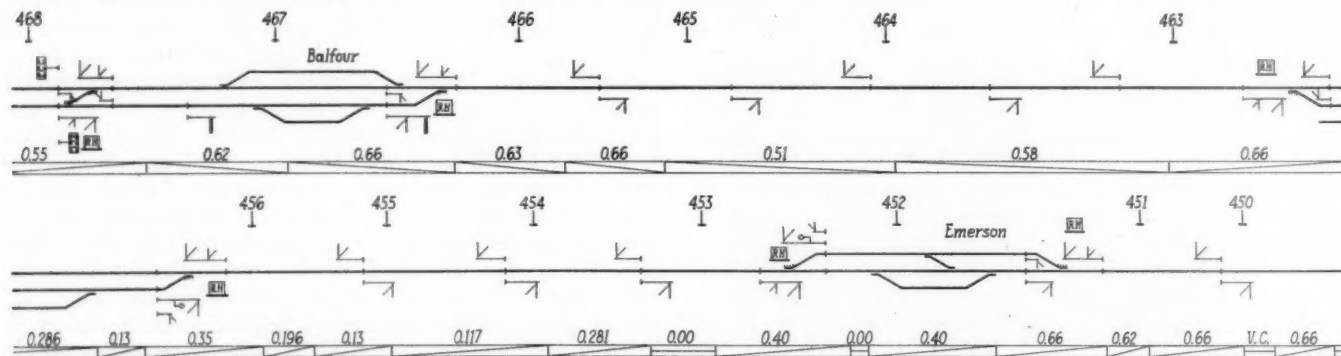
Before the installation of centralized traffic control the passing tracks were rebuilt using new rail, tie plates, and ballast, so as to place these tracks in the same class as the main track. The center crossovers at McPherson, Emerson, and Malvern were removed, which provided a single passing track at each station approximately two miles long. However, at Hastings, the center crossovers were left in, but the switches were equipped with power machines under the centralized traffic control. At Balfour, a new crossover was installed approximately 2,000 ft. west of the station which provides an advance track of approximately one mile, which can be used as eastbound main track or to advance one train around another. All controlled switches were changed from No. 11 turnout to No. 15 which permit a speed of 25 m.p.h. for either facing moves into a siding or trailing moves out of a siding. The track arrangement is shown in the diagram, which also indicates the grades. By utilizing the advance passing tracks at each end of the territory as double track, the single-track was reduced from 26 to 24 miles.

The installation of the centralized traffic control system eliminated the mechanical interlocking plants at Red Oak and Balfour, the existing interlocking tower

Table I—Annual Savings Based on Study of 33-Day Period

		33-Day Period	Per Day	Per Year
<i>Wage Savings</i>				
Total saving of straight time on account of being able to advance trains by signal indication which could not have been done under train-order operation.	19 trains— 8 hr. at \$5.83 per hr.	\$46.64		
Average delay of 10 min. per freight train saved because operator handles switches electrically.	360 trains— 60 hr. at \$5.83 per hr.	\$349.80	\$12.01	\$4,383.65
		\$396.44		
Average savings per year in station service by eliminating nine operators and one dispatcher.				14,201.00
<i>Fuel Savings</i>				
<i>Stop Meets</i>				
Freight trains, 467 meets averaging 500 lb. fuel each....	116.7 tons			
Passenger trains, 15 meets averaging 200 lb. fuel each....	1.5 tons			
<i>Non-stop Meets</i>				
Freight trains, 14 meets averaging 500 lb. fuel each....	3.5 tons			
Passenger trains, 20 meets averaging 300 lb. fuel each....	2.0 tons			
By reason of delays avoided to all trains—68 hr. at 200 lb. per hr. ....	6.8 tons			
Total .....	230.5 tons			
at \$2.50 per ton		\$576.25	\$17.46	\$6,372.90
Total Savings Per Year .....				\$24,957.55

at Red Oak being used to house the control machine and the central station control apparatus. Power switch machines controlled from the central station



Track and Signal Plan of Centralized Traffic

were installed for the operation of all the switches originally interlocked at Red Oak and Balfour, as well as those in the passing tracks at all intermediate stations including the two crossovers remaining at the center of the passing track at Hastings.

In order to provide for the most efficient operation of trains with the new installation, a complete system of indications was included as part of the control machine. A record of all train movements is made automatically by the automatic train graph which is part of the control machine, an "OS" point having been established at each controlled switch. The occupied or unoccupied condition of the track is indicated by lights on the track diagram, which is a part of the control machine. The positions of all electrically-operated switches are checked on the control machine by normal and reverse light indicators. Information as to the position of the controlled signals at the ends of sidings is indicated on the control machine by the use of light indicators which show whether the signals at a controlled location are at "stop," cleared for eastbound moves or cleared for westbound moves. This furnishes the men operating the machine with complete information, obtained at all times from the field.

### Results Satisfactory

The trains on the territory were previously directed by train orders. The placing in service of the centralized traffic control system eliminated train orders and

**Table II—Statement Showing Summary of Freight Train Performance in Centralized Traffic Control Territory for June, 1930, as Compared with June, 1929**

Year	Number of Trains	Avg. Time Consumed Arrival Red Oak to Departure Balfour	Delays	
			Meet Trains	Others
1929	180	2 hr. 02 min.	21 min.	41 min.
1930	174	1 hr. 53 min.	12 min.	39 min.
1929	160	2 hr. 08 min.	23 min.	48 min.
1930	174	1 hr. 58 min.	13 min.	46 min.
Savings because of reduction in time consumed				
Red Oak-Balfour:				
Westbound—174 trains at 9 min. per train—Wages \$152.16				
Eastbound—174 trains at 10 min. per train—Wages 169.13				
Total \$321.29 per month				

the classification of trains, and released the operators at Balfour and the intermediate stations. The running time between Red Oak and Balfour has been materially decreased. As there has been no change in the type of motive power, a direct comparison can be made between the operating results under the previous method by time-table and train orders, and those under the new method of directing train movements by signal indica-

tion. Formerly it was necessary to issue as many as 48 Form 19 train orders each day for the operation of trains over this section of track, whereas no orders are now required.

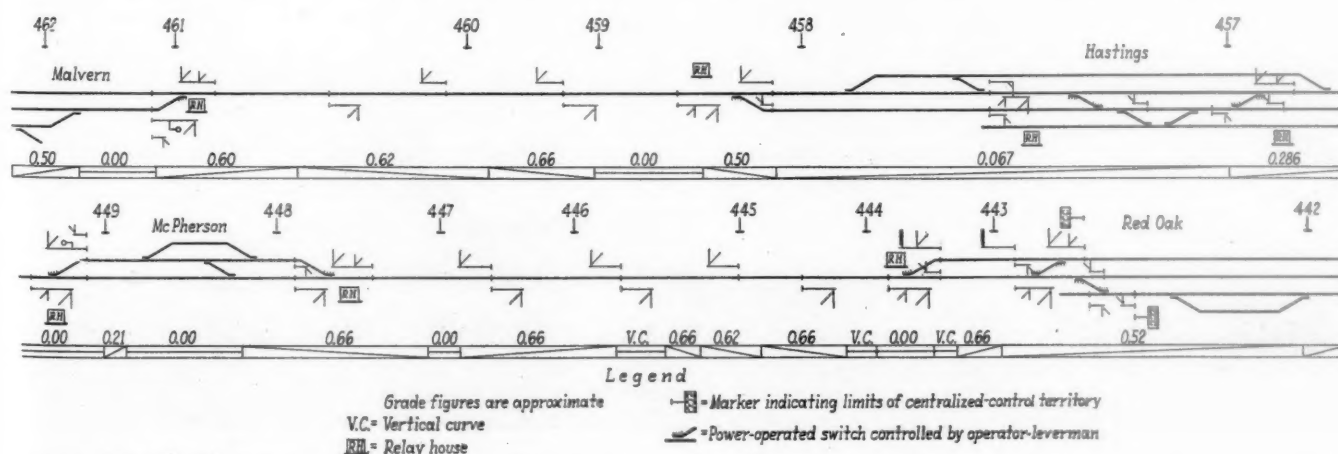
Notes made by the operator during the first month of operation show several cases where the elimination of stops, formerly required to handle passing-track switches, now permits trains to be advanced farther than would have been the case previously. For example, on April 7, it was possible to advance extra freight train No. 5502 from Malvern to Hastings five miles, just four minutes ahead of passenger train No. 14, whereas if it had been necessary to stop No. 5502 for the trainmen to handle the passing-track switches, this train would have been held at Malvern for No. 14 and No. 2, and would then have been further delayed for No. 91. On April 20, extra freight No. 5508 was advanced from Malvern to Balfour for passenger train No. 8 thus saving 30 min. for the freight, whereas under train-order operation, it would have been necessary to hold No. 5508 at Malvern. Numerous other instances such as these in which the train time saved ranges anywhere from 15 to 30 min. are common occurrences.

With seven passenger trains and from four to seven freight trains each way daily, or a total of 24 to 27 trains at the present time, it is evident that numerous meets must be made in this 24-mile territory; the operators' notes for the first 33 days of operation show that from 11 to 19 meets were made daily. The saving in time and fuel made possible by the elimination of train stops under the centralized traffic control system is explained in Table I.

The two-mile passing tracks with power-operated switch machines permit non-stop meets to be made frequently; for example, No. 6, the Aristocrat, and No. 12 the Ak-Sar-Ben, make a non-stop meet almost every day at Emerson. On April 13, the fourth day the installation was in service, four non-stop meets were made and on May 12, there were five, two at Emerson, and one each at Malvern, Hastings and McPherson.

### No New Rules Required

Operating trains by signal indication only and without train orders is an old practice on the Burlington, consequently, the necessary rules had been established as a part of the operating rules, and when the centralized traffic control system was placed in service it was necessary only to cover by bulletin the 16 special instructions concerning the handling of the dual-control machines. Copies of these instructions were placed on the inside of the telephone box at each OS loca-



**Control Territory Between Red Oak and Balfour**



tion in plain view of trainmen when talking to the operator at the control station.

The only change necessary in the book of operating rules was to insert four definitions covering (1) Centralized traffic control, (2) Dual-control switch, (3) Dual-control switch machine, and (4) Governing signals.

Upon the completion of the installation, trains were operated on train orders for a brief period, after which a bulletin was issued which eliminated train orders and placed the operation of this territory under signal indication without classification. The bulletin is as follows:

"Effective 12.01 a.m. Thursday, April 10, 1930, between Red Oak and Balfour, Iowa, trains will be operated by the controlled signal system of train operation. Trains will move by signal indication. Signal indications will supersede the time-table superiority of trains, but will not dispense with the use or observance of other signals whenever and wherever they may be required. Trains having work to do on the main line, must obtain permission to use it from the operator-leverman at Red Oak, and must have an understanding as to the length of time that main line can be used. Trains working at stations, must be in the clear at the time specified, or arrange with operator-leverman for additional time. Trains must not use the crossover switches at McPherson, Emerson, Malvern, or use any track connected with the main line at any point in controlled signal system territory, the switch of which is not operated by remote control, without permission from the operator-leverman."

PERISCOPES are being fitted to electric passenger cars running on the Southern Railway, of England, according to a note in the *Railway Gazette*. "Periscopes for the guards in place of side windows," says the note.

EXTRA GANGS now at work on the tracks of the Canadian Pacific number about eight thousand men in the aggregate. In addition to these, half as many more men are engaged in track work, mainly on new branch lines.

THE "KNOW MISSISSIPPI BETTER" advertising excursion conducted by the citizens of that State has lately completed its sixth annual tour. The train this year consisted of 15 cars and the cars containing exhibits are said to have been filled with the finest display yet gathered. Ten of the 15 cars were Pullman sleepers. The route was from Jackson, Miss., through Louisiana, Texas, Oklahoma, Kansas, Colorado, South Dakota, Wyoming, Montana, Oregon and Washington. From Seattle it turned eastward, proceeding through British Columbia, Alberta, Saskatchewan, and Manitoba; thence returning through Minnesota, Wyoming and Illinois.

## Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading in the week ended August 16 showed a slight increase as compared with the week before to 922,823 cars. This however, was a decrease of 179,744 cars as compared with the corresponding week of last year and of 135,086 cars as compared with 1928. Loading of grain and grain products showed an increase of 801 cars as compared with 1929 and of 1105 cars as compared with 1928, while all other commodity classifications and all districts showed reductions as compared with both years. The loading for 33 weeks of this year is now 3,569,000 cars less than in the corresponding period of last year. The summary, as compiled by the A. R. A., follows:

### Revenue Freight Car Loading

Districts	Week Ended Saturday, August 16, 1930	1929	1928
Eastern	202,065	247,157	242,561
Allegheny	184,296	223,967	215,448
Pocahontas	54,041	62,733	55,758
Southern	120,030	144,774	139,728
Northwestern	152,757	180,630	163,752
Central Western	136,843	157,713	159,689
Southwestern	72,791	85,593	80,973
Total Western Districts	362,391	423,936	404,414
Total All Roads	922,823	1,102,567	1,057,909
Commodities			
Grain and Grain Products	62,312	61,511	61,207
Live Stock	21,200	24,664	25,570
Coal	137,669	159,953	160,726
Coke	8,414	11,685	9,139
Forest Products	40,803	68,018	65,929
Ore	57,633	74,574	64,226
Merchandise L.C.L.	234,091	260,085	255,907
Miscellaneous	360,701	442,077	415,205
August 16	922,823	1,102,567	1,057,909
August 9	904,157	1,092,153	1,044,268
August 2	918,335	1,105,920	1,048,821
July 26	919,349	1,102,553	1,034,326
July 19	928,256	1,079,968	1,033,843
Cumulative total, 33 weeks	29,508,152	33,077,671	31,556,812

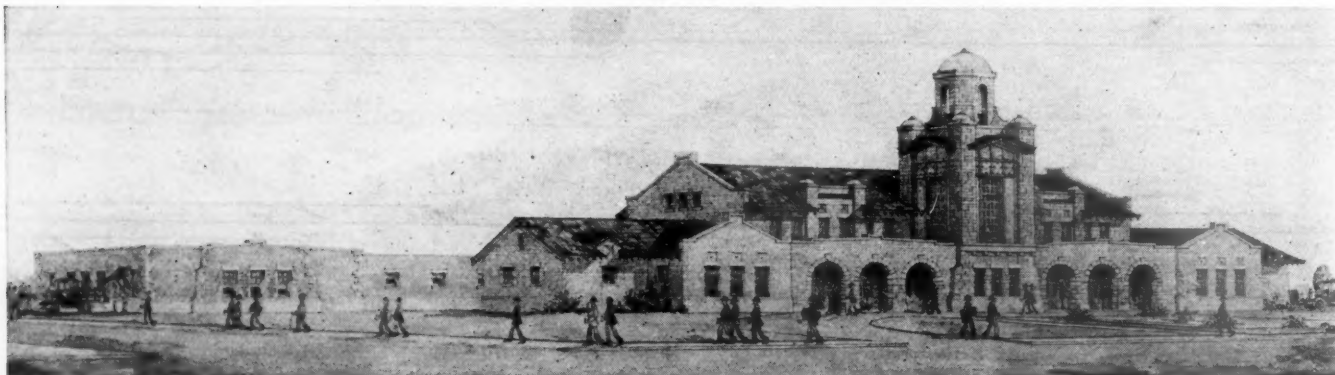
The freight car surplus for the first week in August was 447,221 cars, including 229,166 box cars, 162,371 coal cars, 27,051 stock cars and 13,108 refrigerator cars.

### Car Loading in Canada

Revenue car loading at stations in Canada for the week ended August 16 totaled 64,043 cars, an increase over the previous week of 2,771 cars and a decrease of 5,940 cars from the same week last year.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada		
August 16, 1930	64,043	29,276
August 9, 1930	61,272	29,095
August 2, 1930	58,075	28,238
August 17, 1929	69,983	37,572
Cumulative Totals for Canada		
August 16, 1930	1,948,568	1,123,077
August 17, 1929	2,189,948	1,372,543
August 16, 1928	2,135,071	1,284,806

\* \* \* \*



Architect's Drawing of the Oklahoma City (Okla.) Union Passenger Station Now Under Construction Which Will Serve the Chicago, Rock Island & Pacific and the St. Louis-San Francisco



*The Line of the Western Pacific Through the Desert*

## Operating a Desert Division

*Western Pacific overcomes handicaps of wind  
and sand through Nevada\**

By H. J. Beem

Division Superintendent, Western Pacific, Elko, Nev.

THE Eastern division of the Western Pacific extends between Gerlach, Nev., and Salt Lake City, Utah, 492 miles of main track, divided into four freight subdivisions, with division headquarters at Elko, Nev., which is about the center of the division. All division officers report to the superintendent and he in turn reports directly to the vice-president and general manager, and his assistants. Unusual powers of authority are given the superintendent not only in operation and transportation matters, but also in maintenance and other departments, in order to obtain the highest degree of efficiency in operating the division under the conditions existing.

### Water and Coal Facilities

For 72 miles across the Great American desert, we have no fresh water, with the result that for many years our freight locomotives handled auxiliary water cars. Notwithstanding the fact that our engines were only handling 50 to 60 per cent of engine rating (because of insufficient tonnage being available) they could not make this run of 72 miles without having the engine auxiliary car. On this same run of 72 miles across the desert, we likewise had no refueling stations; and included in this distance was a 10-mile 0.8 per cent grade. It was a common occurrence between 1910 and 1915

for our engines to run out of fuel and, in some instances, their water supply would be exhausted before they reached the end of the desert stretch.

Our freight locomotives at that time were small compared with the modern locomotives. During the period mentioned, we were using hand-fired, coal-burning, consolidated locomotives having a tractive effort of 43,000 lb. with 22 in. by 30 in. cylinders, with 185,000 lb. on drivers. These engines were not superheated and had a coal-tender capacity of 16 tons.

It was a common occurrence in those days, especially during high wind storms across the desert, to run out of coal, and it was almost a weekly occurrence for certain firemen to desert their post of duty after they had shovelled about 14 tons of coal and to leave their engine and train at some desert point, to return to the terminal on the first passenger train which came along.

### Improved Conditions

Conditions have now improved a great deal, especially in our power, as we have the latest type Mikados, superheated, stoker-fired and with booster and almost all other modern equipment. With the coming of the Mikado engines and the construction of a 90,000 gal. reservoir at a midway point in the desert, we were able to eliminate the auxiliary water car; but we have as yet been unable to find any cure for the strong winds across the desert. These winds frequently force us to reduce

\* Abstracted from a paper presented before the June meeting of the Pacific Railway Club.



our tonnage in order to maintain the schedules on our faster freight trains. One of the peculiarities of this wind is that, during the winter months, the prevailing direction is from the northwest, although they seldom blow or interfere with our train movement between midnight and noon. During the fall and spring months we have southwest winds which seldom blow during the night.

Throughout July, August and September we are seldom troubled with winds on the desert, but during the periods of heavy winds we are troubled considerably at different points with drifting sand. This sand causes an unusual number of hotboxes on both locomotives and cars, and it requires close supervision on the part of train service employees during these storms to detect hot journals. Under such circumstances, more frequent stops are made for train inspection. On the arrival of trains at the terminals, we are required to maintain a large force of car inspectors to re-oil the journals, re-condition the cars in general and get the train moving with the minimum delay.

We maintain open telegraph stations every 30 to 40 miles across the desert where the track is comparatively straight and level, for the reason that it is important that the dispatchers keep close check on the velocity of the wind, the direction from which it is blowing and how trains are progressing against certain weather conditions. The desert winds come up suddenly, and we are forced in many cases to regulate our tonnage to meet unfavorable winds.

#### Troubles Encountered

During the late fall and early spring, we frequently have dense fogs which slow up our operation. Our train schedules have been made fast across the desert under favorable weather conditions and during such weather we experience little or no difficulty in maintaining the fast train schedules. However, during our heavy winds, we are compelled, as stated previously, to reduce tonnage or double head in order to maintain the schedule of our trains. Therefore, when such unfavorable conditions come up, the desert division cannot in all cases make up the time of trains delivered late by the mountain division.

During certain periods throughout the summer, and when our traffic is at its peak, we experience a shortage of water at some of our desert water tanks, and we have spent an enormous amount of money trying to develop additional supplies. Wendover, Utah, is the first terminal west of Salt Lake City, and our station and locomotive water is piped into Wendover, 24 miles from Pilot mountain.

We have an adequate supply of water there, but we haul 60,000 to 80,000 gal. out in tank cars each day to provide an additional supply at Knolls, Utah, 40 miles east of Wendover. Wendover is the freight terminal for the third and fourth subdivisions, and west from that point we have an ascending grade of one per cent for approximately 30 miles. Almost all freight trains westward from Wendover are given helper engines, which increases our consumption of water at this point. On the fourth subdivision, east of Wendover, across the salt desert, our section headquarters are located about every 10 miles, and at each section we have from 8 to 10 water barrels or concrete cisterns buried in the ground, where a fresh water supply is maintained. These barrels or cisterns are refilled three times each week. Because there is insufficient local business in this vicinity to justify an assigned local run, we handle our water peddler for filling these water barrels on power-movement trains, or on through trains.

Notwithstanding the fact that we have fine section facilities across the desert, we are unable to hold efficient track employees, and our labor turnover on the desert sections probably amounts to more than on all other sections on the division combined. During the summer months, we supply all of our station and section forces with free ice, usually handling the ice car on the same train as the water peddler car, making delivery of ice three times each week. They are supplied with free coal and the best of living quarters; yet we are unable to keep any one except foreigners as track men, and they soon become dissatisfied and move on, which results in considerable difficulty in maintaining good track.

With the high wind previously referred to, the dust and sand blow in on to our track from miles out. In order to reduce this drifting alkaline sand to the minimum, we have constructed trenches 100 ft. to 200 ft. from the track, with the idea of keeping as much sand off the roadbed as possible. This has assisted us in reducing the drifting sand to the minimum, but frequently, during certain periods of the year, the air is filled with this sand for hundreds of feet upward, acting much like a heavy fog and restricting the vision to 300 or 400 ft. Under these conditions with the air filled with sand, nothing can be done to prevent the sand from getting on to the roadbed. It has been suggested that we oil out from the track about 1,000 ft., but I doubt if this procedure would eliminate our "sand fogs," as it would only be a short time until the drifting sand would cover the oiled portion and we would again have a condition similar to that which exists today.

After the wind has subsided and the drifting sand has stopped, we still have a bad dust condition because of the currents of air under moving trains. During the spring of each year, we spend considerable money in cleaning this sand off of the track and subgrade. This drifting material quickly forms a light crust. It is impossible to blow it out of the track by air or steam force, yet the movement of trains over it cracks the crust and the fine sand seeps out, resulting in a cloud of dust following each train. As a rule, our heavy wind storms on the desert are over by May 15, and we start in immediately with additional track forces to shovel and sweep this dust or sand from our ballast section to clear the subgrade. After this has been completed, we oil the subgrade thoroughly so as to eliminate the dust condition almost entirely until the fall winds start. This procedure has to be followed each year in order to hold the dust down to the minimum.

#### Salt Air Corrodes Metals

For 12 miles across the salt beds, we are not troubled with drifting sands, but the damp salt atmosphere seriously affects all metal, and our rail, angle bars, tie plates, etc., throughout this section soon start to rust. We are now using oil-treated angle bars to prevent this corrosion and rust; before we started to use them, the bars and bolts would "freeze" to the rail, making it necessary to spend considerable money and effort to remove old bars.

On the other hand, this salt atmosphere has a tendency to preserve wood and prolong the life of our ties. In this same section, we are forced to wash the insulators on our telephone and telegraph poles every four or five years, as they become covered with a hard crust of a salt-like formation which seriously affects the successful working of the wires. Electric storms across the desert also frequently damage our telegraph and telephone service. These electric storms usually occur during the extreme hot weather of July and August and following them, we are sure to have cloudbursts in the

mountains. In most all cases, cloudbursts will seriously affect our track at some point and to guard against such damage, we put on track-walkers continuously during the particular season of the year when cloudbursts are occurring.

#### The Desert Also Has Advantages

Through our desert sections, we have little or no grade and the track is comparatively straight and level. We are not required to maintain any right of way fences, experience no trouble from trains striking vehicles at highway crossings, for we have sometimes no highway crossings in stretches of 100 miles. We experi-

ence no trouble with slides or snow, and few bad results are received from heavy rainfalls.

Our older train service employees prefer the desert jobs, as against working over the mountains. This has its advantages, as these men become thoroughly trained in combating the weather conditions and realize the importance of closely supervising the movement of their trains under unfavorable weather conditions. We have a high degree of efficiency from our train service employees over the desert, and dispatchers, operators and other station employees also become efficient in dealing with our operation. Their long service qualifies them to make decisions when a delicate situation arises.

## Handling Stock Sales to Employees \*

*Detailed plans involve many complexities—Methods of an industrial concern and a railroad described*

By H. Hurst

Assistant to the Treasurer, Pennsylvania R. R.

THERE are many variations of stock subscription plans; some may be classified, rather broadly, into groups, as follows:

1. Plans providing for the deposit of funds by employees by methods similar to customary savings propositions; such funds being used for the purchase of stock. In many instances interest is paid by the employer on such savings deposits.

2. Plans providing for subscriptions by employees to consolidate funds and for delivery to subscribers of allotments of stock based on their credit in such funds. Interest is sometimes paid by the employer on money so deposited.

3. Plans whereby stock is paid for by dividends thereon without any other money outlay by the employee.

4. Plans providing for employees to complete payments for stock in not more than one year, and plans whereby payments are extended over more than twelve months. A short term subscription is, perhaps, easier to control and the possibility of great variation in prices of the stock during the period of the subscription is reduced, but there is also the chance of encouraging speculative tendencies by reason of the subscriber receiving his shares within too short a time. It is debatable as to whether or not advantage to the subscriber lies in the short term plan which does not commit him to fixed payments over a long period of months or years, or in the long term method which tends to fix more securely by long continued practice the habit of thrift and saving.

5. Plans enabling employees to purchase stock at less than the current market price.

6. Plans providing for proportionate contributions by the employer to be added to employees' subscriptions.

7. Plans whereby employee stockholders receive additional dividends or bonuses.

8. Plans providing for participation by employees, who complete their subscriptions, in the distribution of funds accumulated as a result of other employees cancelling subscriptions.

There are many other plans for employee subscription for stock, but these mentioned have been used, perhaps, most generally; the plans providing for relatively long terms of payment and combining the subscription with either a convertible savings plan or with participation in a combined fund appearing to be most favored.

There are wide variations as to time of subscription and payment, depending somewhat on the plan used, the type of security offered, eligibility requirements and the views of the employer. One of the principal variations concerns the length of time during which subscriptions will be accepted; some plans provide for subscriptions to be received during a limited period; others permit acceptance at any time and whenever individual employees become eligible. As to eligibility, many plans provide for subscription to be open to all employees, whereas others require six months service and some one or more years. In some instances subscriptions are limited to officers of the employing company, or to employees especially selected by the company.

Some plans limit subscriptions proportionately with the earnings of the subscribers. It has been found desirable to limit the subscriptions of employees to reasonable percentages of their salaries or wages, not exceeding 25 per cent. Even though a subscriber could afford to save a greater percentage of his income, it might be injudicious to advise him to put too much money into any one security.

#### Wage Deduction Best Method

Many plans provide for payment by deductions from salaries and wages only; some permit payment in cash at time of subscription; and some require part payment in cash at time of subscription, the balance being paid in instalments. Experience supports the system of payment by deduction from salaries and wages, a method generally satisfactory to the subscriber and more economical for the employer. Moreover, it removes the urge to hasten possession of the stock so it may be immediately sold, and where this situation exists, the employer is warranted in requiring payment by deductions

\* An address delivered at the convention of the Railway Treasury Officers Association, Cleveland, Ohio, in June.



from salaries and wages only. On the other hand, it has been found advisable to provide liberally for the withdrawal of subscriptions, as subscribers are less reluctant to enter into a proposition whereby their money is withheld for a lengthy period, if they know that in emergency it can readily be made available.

The matter of interest paid or collected is dealt with under some plans by a subscriber receiving interest at a specified rate on the amount paid in up to the time he receives his stock, but no dividends on the stock are paid to him; other plans provide for the subscriber to receive dividends from the time the subscription is accepted, and for him to pay interest at a specified rate on the unpaid balance of his subscription; and there are many other methods of crediting interest, dividends or other extra payments to the subscriber's account, thereby hastening payment or reducing the amount which must be paid in cash or deducted from salary or wages.

When a subscription is completed and the subscriber has received his stock, it has been found desirable to let him retain it or sell it as he may determine. Of course, one of the purposes of distributing stock to employees through subscription is to encourage their ownership, and the employer is warranted in providing inducements to subscribers to retain stock after they possess it.

#### The Details of an Industrial Company's Plan

One financially strong industrial company adopted a plan substantially as follows:

It provided for the sale of six per cent, cumulative stock of the company to employees and for the payment to subscribers of \$3 per share for five years in addition to any dividends declared on the stock. The subscription price of the stock under this plan was \$115 per share. The plan did not carry any redemption feature. Employees desiring to dispose of their stock could do so at the current market price through the usual channels, or if requested by the employee, through the company. Any employee receiving not more than \$6,000 a year in salary or wages and who was credited with at least one year of continuous service with the company as of a specified date, could subscribe for stock. The continuity of employment of subscribers was established in accordance with the company's rules. Any eligible employee could subscribe for an amount of stock, the subscription price of which was equivalent to not more than 20 per cent of his annual salary or wages, calculated as to his rate of pay as of a specified date, but in no case to more than ten shares. Additional pay allowed for length of service and extra compensation to salaried employees, except awards received under a bonus plan, were included in calculating the amount for which an employee could subscribe.

The annual wages of an employee working on an hourly basis were considered as 2,400 times such hourly pay. Subscription could be for fewer shares than the amount for which the employee was entitled to subscribe but no subscription was accepted for less than one share. An employee entitled to subscribe for a fractional part of a share could subscribe for a whole share in lieu thereof; no fractional part of a share being issued. Subscriptions for stock were accepted at any time on or before a specified date, but no subscriptions were accepted after that date. Subscriptions were accepted only on forms supplied for the purpose, and either a part payment or a full payment form, or both, could be used, but the total number of shares subscribed for could not exceed the number of shares to which the employee was entitled to subscribe.

The stock had to be paid for within one year, except that the final payment was to be credited to the subscriber not

later than a specified date, approximately 54 weeks after the subscription closing date. Subscribers could pay in full at the time of making subscriptions, but all subscriptions not paid in full had to be paid in amounts of \$10 per share per month, no more and no less, either by check or money order, drawn to order of the company, or by deduction from salaries or wages, duly authorized in writing. However, the last monthly payment was for \$1.95 per share, being reduced by the net amount of interest credited to the subscriber. Subscribers wishing to complete their subscriptions could do so at any time within the subscription period.

Subscribers received their first credit on the tenth of the first month following the closing date for subscriptions, and subsequent payments were credited on the tenth of the following month. Interest at the rate of 6 per cent, per annum was allowed on instalment payments, subject to final adjustment for that portion of the quarterly dividend which accrued to the date of final payment. The stock carried dividends, payable quarterly, only after it had been paid for in full.

#### Extra Payments to Employees Who Hold Stock

As an inducement to subscribers who completed their payments and received certificates of stock, to continue to hold their stock and to continue in the company's employment, an extra payment of \$3 per share per year is paid annually for five years to such subscribers who were in active service of the company and whose subscription stock was in their respective names in the records of the company at the close of the preceding year. A certificate of stock was issued and delivered when the stock subscription was paid for in full, and only one certificate was issued for each subscription. If a subscriber resigned from the service or was discharged or failed to make payments at the minimum rate provided, the subscription was cancelled and stock delivered to him in amount corresponding to the payment received, plus the balance of interest due. Fractional amounts were adjusted in cash.

Upon written request of a subscriber, his subscription was cancelled and settlement made as provided above. In the event of cancellation at the request of a subscriber, or on account of his failure to maintain minimum payments, any shares issued in settlement were entitled to the extra inducement payments provided for. A subscriber on leave of absence without pay could continue his instalments or complete his subscription, but upon its completion he did not receive the extra inducement payments until his return to the service. If a subscriber resigned or was discharged from the service, no further extra payments were made to him. The stock which he held was entitled thereafter to the regular dividends only, if declared.

#### The Pennsylvania's Plan

The Pennsylvania Railroad has given two opportunities to its officers and employees, and those of its subsidiary companies, to subscribe for its stock, the most recent one having been offered under date of May 6, 1930, when the president issued a circular letter, which was delivered to every officer and employee simultaneously with his pay draft, wherein it was stated that the board of directors of the company, under authority of the stockholders, had adopted a plan whereby the company was enabled to offer to officers and employees who on May 15, 1930, had an aggregate service of six months or more the opportunity to subscribe for shares of stock under certain terms and conditions, subject to approval by the Interstate Commerce Commission. The terms and conditions provided that 360,000 shares of stock

were offered for subscription at the price of \$50 per share, its par value;

That the purchase of these shares by officers and employees is entirely optional and voluntary on their part;

That subscription could be made only on a form attached thereto;

That subscriptions were to be delivered to each subscriber's immediate superior officer and be in the hands of the treasurer not later than June 16, when the privilege ceased;

That the smallest amount which might be subscribed for was one share, and the largest 20 shares;

That subscription was limited, however, to the extent that the total monthly deduction from the pay of the subscriber would not exceed one-fifth of his monthly basic wage or regular pay at the time of subscription;

That should the offering be over-subscribed, the larger subscriptions would be reduced, so the aggregate amount subscribed would not exceed 360,000 shares;

That payment of subscriptions will be by monthly instalments deducted from the subscriber's pay, beginning with the pay for the second half of July, at the rate of \$2, \$5 or \$10 for each share, according to the preference indicated by the subscriber on his subscription form;

That interest at the rate of six per cent per annum will be allowed on all payroll deductions and credited quarterly to the account of the subscriber, and used to complete their payments;

That upon completion of payments certificate will be issued in the name of, and delivered to, the subscriber;

That dividend checks will thereafter be mailed to the home address of the subscriber; and

That if for any reason subscriptions are cancelled, a refund will be made of all amounts collected on such subscriptions with interest at the rate of five per cent.

Attached to the president's letter was a form of subscription, wherein the subscriber designated the number of shares subscribed for and the monthly rate per share he agreed to have deducted from his pay; wrote his name, home address, place of employment, position and operating Division; and if under twenty-one years of age, the date of birth. Appended to the subscription was a form wherein the subscriber's employing officer certified that the subscriber was on May 15, 1930, in the employ of the company and had aggregate service of six months or more, and that the total monthly deduction for the subscription did not exceed one-fifth of the subscriber's monthly basic wage or regular pay.

With the president's letter the officers and employees also received a letter from the treasurer, wherein the terms and conditions covering the operation of the subscription were explained in more detail. Additional provisions stated therein were that allotments of stock would not be made until after the expiration of the subscription period on June 16;

That stock subscribed for under the plan would not participate in any rights to purchase new securities issued by the company and offered to stockholders, or be entitled to dividends, until payments were made in full and a stock certificate issued therefor;

#### Cancellation Right Reserved

That in case of claims arising out of deaths, disabilities, furloughs, leave of absence, or other emergencies, and to avoid misunderstandings and expense, the company reserves the right to promptly dispose of such cases by cancelling the subscription and refunding payments made thereon with interest at the rate of five per cent per annum;

That subscriptions will be cancelled:

Upon written request of the subscriber;

Upon termination of service of the subscriber voluntarily or by discharge. (Furloughed employees may complete their payments);

Upon pledge or assignment by the subscriber of his rights under the plan;

Upon discontinuance of payments by the subscriber without the consent of the company for three consecutive months;

Upon termination of service by death or permanent disability, except as otherwise provided;

That a subscription may not be cancelled in part;

That cancellation of a subscription forfeits right and interest of the subscriber in and to stock subscribed for;

That in all cases of cancellation, a refund will be made of the full amount paid by the subscriber with interest at the rate of five per cent.

That while generally payment of subscriptions will be made in monthly instalments deducted from the pay of the subscriber, in the following circumstances the required monthly payment shall be made on or before the last business day of each month direct to the treasurer:

(a) If the subscriber is granted a leave of absence;

(b) If the employment of the subscriber is suspended temporarily by furlough or otherwise;

(c) If the subscriber is temporarily disabled.

#### Payments by Employees on Leave

In the case of circumstances (a) and (b), payments may at the request of the subscriber given in writing to his employing officer, be suspended for the period during which his name is not on the payroll, not, however, exceeding three consecutive months. When a subscriber is absent from duty for more than three months, payments of instalments for periods beyond three months must be made by direct remittance to the treasurer on or before the last business day of the fourth month, and of each month thereafter. Such payments are to continue until subscriber is returned to duty and regular payroll deductions are resumed. Delinquent payments are to be made up as promptly as possible following return to duty, by direct remittance to the treasurer. If a subscriber is closed out of service at the end of a leave of absence or furlough, all payments made will be refunded, unless final payment for the stock has been made by monthly payroll deductions, or by monthly payments direct to the treasurer. In the case of circumstance (c) the company, upon written request to the treasurer, may waive payments during the period of disability if such action is warranted;

That the subscription of an employee whose service is terminated by permanent disability may, at the election in writing of such subscriber, or, in case of the employee's death, at the written request of the person designated to administer the estate, be continued until the full price of the stock subscribed for has been paid by monthly instalments direct to the treasurer;

That a pensioner will not be permitted to subscribe, but any subscriber who is pensioned after May 15, 1930, may continue to pay his subscription by monthly deductions from his pension.

#### Stock Purchases by Minors

That a subscription will be accepted from an employee under 21 years of age, but when payment for the stock is completed the certificate will not be delivered to such minor employee until he becomes of age, and no transfer thereof may be made by him. Dividends on stock paid for in full by a minor will also be withheld by the company and paid when he becomes of age. If such minor has a lawfully constituted guardian, the certificate may be delivered and dividends paid to such guardian and the



company will also in this event recognize authorized transfers of stock:

That if so desired, the company will hold in its vault for safekeeping, free of charge, stock certificates for which monthly payments have been completed by employees.

Appended to the Treasurer's letter were thirty-five questions and answers thereto, covering points most frequently asked about in connection with such projects.

To assure efficient cooperation in handling details of the stock subscription plan in all departments, a circular letter of instructions was issued by the treasurer and delivered to all employing officers, together with copies of the president's letter and of the treasurer's letters previously referred to, wherein explanation is made of the method of receiving, certifying and forwarding subscriptions and of the use of a form for notifying the treasurer of transfers of employees from one operating division to another, refunds to be made account cancelled subscriptions, suspended payments and various other information. Correspondence and other work in connection with employees stock subscriptions is under the general direction of the treasurer. Neither the employing officer nor the officer preparing the payrolls will keep a detailed account of payments made on subscriptions, and it is, therefore, necessary for the treasurer to receive prompt advice of resignations, furloughs, deaths or insufficient earnings to meet instalment requirements, and such information is reported on the form mentioned.

Each operating division or payroll sub-division is given a number, and that number is used as a prefix in numbering subscriptions. Throughout all subsequent operations and in all correspondence, the hyphenated number is used and readily indicates the location and identity of the subscription referred to.

#### A Card File for Each Subscription

After subscriptions are numbered, a permanent record of each subscription is made on a card which has space sufficient for the entry each month of the amount collected. This card also bears information of the number of shares allotted, the amount of the subscription, the amount to be deducted monthly from the payroll, whether the subscriber is a minor, and space for the stock certificate number when issued, or of amount refunded and interest paid if subscription is cancelled.

Simultaneously with the writing of the card, a form of notice is prepared in duplicate, whereon is stated the subscription identifying number, name of subscriber, division or department, place of employment, company employed by, position, number of shares allotted, amount per share to be deducted, and total amount to be deducted; one copy is sent to the subscriber by United States mail to enable him to verify his name and address, and to inform him of the number of shares allotted to him and the amount which will be deducted monthly from his pay; the other copy is sent to the employing officer to enable him to make appropriate notation on the subscriber's service record card, so that in the event of the employee leaving the service or there being other developments affecting his service, the treasurer would be promptly informed of any circumstances affecting the subscription. After abstracting the necessary information, the employing officer forwards the forms to the officer in charge of preparing the payroll for his information and use.

#### Treasurer and Comptroller Co-operate

The payroll has a column wherein the amount deducted from each subscriber is entered, and from the

payroll each deduction is entered on the subscriber's card record by employees under the joint supervision of the treasurer and comptroller, this joint supervision being arranged as a matter of economy to avoid a separate auditing force.

In the first subscription opportunity offered to employees, after the elapse of several months, subscribers were permitted to make cash payment of the balance due on their subscriptions, and circular letters were issued wherein was stated the amount due for each share of stock for each month during the remainder of the period for which the subscription would normally continue. When a subscriber availed himself of the accommodation, the receipt of his payment was acknowledged on a form prepared in triplicate, one copy being mailed to the subscriber, another copy was sent to his employing officer advising him that final payment had been received and that no further deductions should be made on the payroll; and the third copy was sent to the Secretary for his information in connection with the issuance of a stock certificate.

When payments are received from employees by other means than deductions from the payroll, receipt is acknowledged on a prescribed form.

When payment has been completed and the secretary's copy of the form referred to above is being completed for him, a stock certificate number is entered thereon, then two addressograph plates are prepared, on one is imprinted the subscriber's name and home address; on the other the number of shares paid for, and amount of dividend last paid on a like number of shares. When the plates are completed they are used to print the information on the stock ledger record card, and the appropriate plate is also used to place the subscriber's name on a stock certificate; to prepare, in duplicate, a transmittal letter enclosing the stock certificate to the subscriber, and to prepare for use of the Post Office Department a list containing twenty names to each sheet, of the addresses appearing through "window" envelopes, on the transmittal letters. The stock certificate number is used as the registered letter number.

It may be interesting to say that in the first stock subscription offer made by the Pennsylvania Railroad in the year 1928, there were 172,700 employees eligible to subscribe; 103,703 subscribed, of whom 59,943 have completed payment; 30,756 are continuing payments on uncompleted subscriptions, and up to and including April, 1930, there were 13,004 cancellations. In handling the subscription offer, approximately 400,000 form letters and 100,000 other letters were issued, and the cost of handling was approximately \$2 per subscription.

\* \* \*



A Southern Pacific Train at Glendale, Cal.

# Pennsylvania's Improvement Work at Philadelphia Progresses

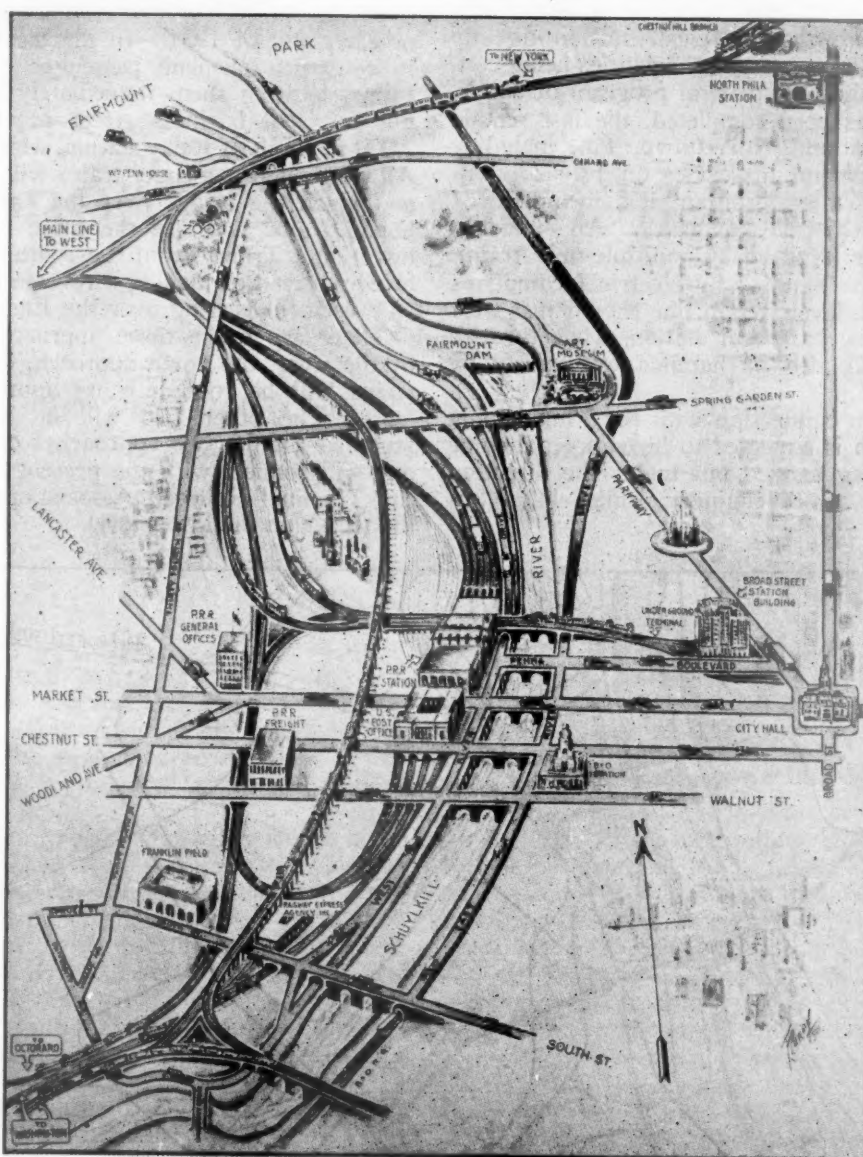
THE accompanying artist's sketch, devoid of details, shows the general relation of the important units in the extensive improvement program which the Pennsylvania is carrying forward at Philadelphia, Pa. This project, which was outlined in detail in the *Railway Age* for February 5, 1927, includes a new passenger station on the west bank of the Schuylkill river in West Philadelphia, a new office building between Sixteenth and Seventeenth Streets, directly in the heart of the city, with suburban passenger facilities beneath it, a railroad office building, a combination freight house and warehouse, railway express facilities, a \$10,000,000 post office building and a terminal power plant in West Philadelphia, all in close proximity to the main passenger station. In addition, the project involves the extensive rearrangement of tracks, some of which will be elevated and others depressed, and the electrification of all train operation within the Philadelphia area.

Starting in 1926 and progressing continually, many phases of the project are completed or are well under way at the present time. The railroad office building, which was the first large unit to be completed, was opened for occupancy in the fall of 1927; the freight-warehouse and the terminal power plant were completed and put in operation last fall; the new Broad Street office building was opened to occupancy on April 1 of this year; the

underground suburban passenger facilities in connection with the Broad street building are now nearing completion and will be put in service on or about September 28; and much of the track and auxiliary work have already been completed. The principal work yet to be started includes the main passenger station, the railway express facilities and the post office building. Plans for these facilities are well under way. In fact, that part of the main station in West Philadelphia that is to be used solely by suburban trains is actually nearing completion, and it is expected that work on the station proper will be started early next spring.

When the Philadelphia improvement project is completed, through trains from New York for the West will enter the new West Philadelphia station from the North over tracks now being constructed and to be known as the River line. On leaving the station, they will proceed south under the post office building, and around the loop tracks shown, under the present high-level freight line, and will then use the depressed tracks alongside the general office building to a connection with the tracks used at the present time by trains from the present Broad Street station to the West.

Trains from the West for New York will use this same route in the reverse direction. New York—Washington trains will enter the station from the North and, leaving the station at the south end, will connect with the present main



(Courtesy Pennsylvania News)

Artist's Conception of Completed Improvements at Philadelphia



line tracks to Washington in the vicinity of Franklin field.

All suburban trains into Philadelphia proper will run through the north wing of the main station, at right angles to and above the through tracks, and will continue across the Schuylkill river on a new four-track bridge, already completed. The methods used in the construction of this bridge, which were quite unusual, were described in the *Railway Age* for December 7, 1929. From the river bridge suburban trains will descend into a subway leading to the underground suburban passenger station in the center of the city, directly under the new Broad Street station building. This station, which will have nine tracks, will, with the new main station at West Philadelphia, completely replace the present Broad Street station.

#### Electrification of Suburban Service

As already mentioned, the entire project will be electrified in keeping with the Pennsylvania's plan of electrifying all suburban service out of Philadelphia. In fact, with the exception of electrification directly within and about the new passenger facilities being constructed at Philadelphia, the general program of suburban electrification has been completed, the last section between Philadelphia and Norristown, Pa., including 17 miles, having been put in service on July 20. Altogether the electrification program has included 131 miles of line with 426 miles of track. All suburban traffic is now being handled by multiple-unit trains. Freight trains will be handled by electric locomotives over the present high-level freight line shown just west of the site of the new passenger station, while through passenger trains will also be handled exclusively by electric locomotives.

All of the work in connection with the Philadelphia improvements, which is expected to be completed some time in 1934, is being carried out under the direction of Robert Farnham, chief engineer, Philadelphia improvements.

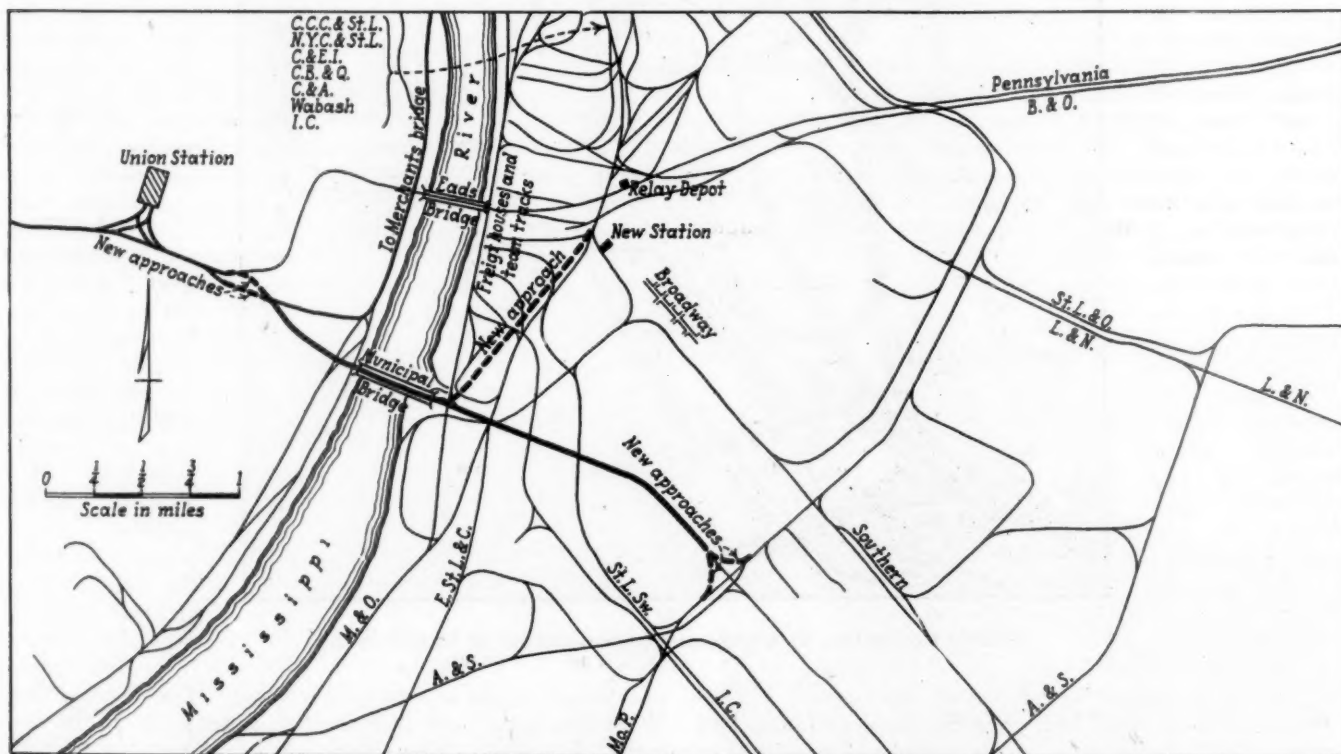
## Railways to Operate Over St. Louis Municipal Bridge

(Continued from page 433)

ever, it is necessary for the city to build five new approaches to the bridge at a cost of \$2,500,000 for construction and \$800,000 for property, a total of \$3,300,000. Since the city is without the funds to do this and a bond issue would require a general election, the railway has agreed to advance the required amount. The debt, which is carried at five per cent, is to be wiped out by crediting the sums due the city for the use of the bridge, after deduction of interest and the \$140,000 due from the city for the toll exemptions on the Eads bridge. This arrangement provides a satisfactory means of financing the project and relieves the city from the necessity of levying taxes or special assessments.

The city is to prepare the plans and execute the work in co-operation with the railway. It is expected that the entire project will be completed in the late summer or early fall of 1931. In the meantime the railway is to construct adequate passenger facilities in East St. Louis, locating them immediately south of Broadway, the principal business street in that city, and about 2,000 ft. south of Relay station, which is to be abandoned. All westbound passenger trains will pass the new station and reach the bridge over the north approach. East-bound trains will use the same route in the reverse direction. Trains from the south will head across the bridge instead of making a reverse movement as is done at present in passing over the Eads bridge.

There are to be three approaches on the east side of the river, the north approach, over which passenger trains will be routed, being approximately  $1\frac{1}{4}$  miles long. The other two will be used exclusively for freight. Of the two approaches on the St. Louis side, one will connect with the present elevated structure of the Terminal Railroad Association and the other with the tracks on the lower level.



Map Showing Approaches to Municipal Bridge and New Station at East St. Louis



A 60-Ton, 300-Hp. Oil-Electric Switching Locomotive

# Economics of the Oil-Engine Locomotive\*

*Comparative data from seven railroads for oil-electric and steam locomotives analyzed*

By A. I. Lipetz

Consulting Engineer, American Locomotive Company

**D**ATA received from railroads in reply to questions pertaining to cost of operating oil-electric locomotives in America are compiled in Table V. The information is far from being complete and the table represents the best general summary which the reporter was able to prepare from the available data.

The term of service of road locomotives and of some switching locomotives had been so short that railroads were unable to give out any information on these locomotives. The information received turned out to pertain exclusively to switching locomotives with which the railroads had already had experience during several years. Roads A to K reported on locomotives of 300 hp. output, although one of them also had 600-hp. locomotives; roads K and L sent data on these latter locomotives.

Column 2 gives the number of hours the locomotives had been working on each particular road during a certain period of time. For steam locomotives the roads gave statistical figures for a year preceding, or during, the service of the oil-electric locomotives which were assigned to do the same kind of switching work. Practically all railroads stated the number of hours of actual

work; only one road (L) gave the number of miles instead of hours, which were estimated for the table on the basis of six miles an hour, as prescribed by the Interstate Commerce Commission.

## Road Operating Costs

Column 3 shows the amount of engine crew wages for the number of locomotives and the period of time included in column 2. The number of men in the crew on roads, A, C, D, G and K is one; on other roads there are two men in the crew. This accounts for the difference in the cost of crew per hour, which can be obtained by dividing figures of column 3 by corresponding figures of column 2; they are given in Table VI. For the above five roads with one-man crews they are, respectively, per hour: \$1.079, \$1.228, \$0.983, \$0.992, \$0.944. For other roads with two-men crews they fluctuate from \$1.543 to \$1.654. The average for all roads is \$1.35. For steam locomotives they vary from \$1.631 (road B) to \$2.078 (road C), with an average of \$1.85. The wages of the conductor and trainmen are not included in the table.

Column 4 shows enginehouse expenses and the cost of supplies. For oil-electric locomotives this seems to be a very indefinite expense item. It fluctuates from nothing to \$0.603 an hour (see Table VI—Road C), depending upon conditions of work, mainly upon con-

\* A portion of the report on Question V—Locomotives of New Types, presented at the eleventh session of the International Railway Congress Association, held at Madrid, Spain, May 5 to 15, 1930.



ditions of storing locomotives between hours of service. The same is true for steam locomotives; on road A enginehouse-expenses amount to only \$0.008, while on road K they are \$0.822 an hour.

Columns 5 of Tables V and VI show where the economy of the oil-engine locomotive lies. The cost of fuel oil and gasoline for auxiliaries fluctuates from 13.7 (road K) to 24.2 cents (road E) for 300-hp. locomotives. For 600-hp. locomotives this item goes up to 33.5 cents an hour. The reason for the fluctuation is mainly the variation in load factor of the oil engine

maintenance of oil-electric locomotives from \$0.52 to \$1.621 an hour, with an average of \$0.952. Maintenance of steam locomotives is more uniform, fluctuating between \$0.726 and \$1.09, with an average of \$0.914, although the age of the steam locomotives under consideration varied from 10 to 63 years. Thus the cost of maintenance of the oil-electric locomotives is practically the same as that of the steam locomotives.

Column 9 of Table V gives the total operating cost for each road. It is a sum total of columns 3 to 8. Column 10 shows the total cost of operation per hour

Table V—Cost of Operation of Oil-Electric Switching Locomotives in Comparison with Steam Locomotives Doing the Same Work

1	2	3	4	5	6	7	8	9	10	11	12	13
Railroad	No. hours of work of locomotives	Engine-crew wages	Engine-house expenses and supplies	Cost of fuel for main engine and auxiliaries	Cost of lubricating oil and other lubricants	Cost of water and fuel for heating	Cost of inspection and repairs	Total operating cost	Cost of operation per hour of work	Fixed charges on investment (Interest and depreciation)	Fixed charges per hour of work	Total cost of operation per hour of work including fixed charges
OIL-ELECTRIC LOCOMOTIVES												
A	6,924	\$7,473.94	\$3,591.05	\$1,164.03	\$245.86	\$30.00	\$4,770.80	\$17,275.68	\$2.495	\$11,101.32	\$1.603	\$4.098
B	14,762	22,782.75	8,172.57	3,195.22	1,080.89	(1)	16,082.81	51,314.24	3.476	17,073.48	1.157	4.663
C	9,123	11,201.87	5,502.22	1,938.36	547.00	223.61	7,113.64	26,526.70	2.908	33,620.40	3.685	6.538
D	5,185	5,095.48	420.80	1,112.19	457.68	34.41	5,576.79	12,697.35	2.448	10,811.00	2.085	4.533
E	16,871	27,413.71	(2)	4,075.20	1,324.19	10.63	13,821.91	46,645.64	2.765	18,300.00	1.085	3.850
G	3,225	3,198.83	203.32	761.40	169.76	(1)	5,226.48	9,559.79	2.964	(6)	(6)	....
K	9,140	8,624.29	(2)	1,256.30	448.70	198.48	8,692.94	19,220.71	2.103	15,145.83	1.656	3.760
L(7)	4,985(3)	8,243.20(4)	679.43(5)	1,333.98	592.21	61.20	6,674.07	17,584.09(4)	3.527	9,820.80	1.970	5.497
M(7)	2,560	4,231.52	157.62	858.86	137.71	(1)	1,332.34	6,718.05	2.624	(6)	(6)	....
STEAM LOCOMOTIVES												
A	1,929	\$3,638.55	\$16.38	\$1,716.55	\$38.77	....	\$2,101.76	\$7,512.01	\$3.894	\$129.65	\$0.067	\$3.961
B	2,183	3,559.66	1,373.73	2,323.09	65.43	\$87.34	20,725.36	9,484.61	4.345	1,717.00	0.787	5.918(8)
C	5,494	11,414.10	3,505.00	8,204.99	143.69	347.54	5,475.61	29,090.93	5.295	5,290.00	0.961	6.256
D	5,185	9,105.56	304.36	4,071.89	73.11	77.78	3,752.80	17,395.50	3.355	4,275.00	0.825	4.180
E	(6)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	3.370	(6)	0.538	3.908
K	2,909	5,149.61	2,391.85	4,163.18	250.64	192.00	2,676.20	14,823.48	5.096	525.00	0.181	5.276
L	(6)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	5.140	4,500.00	0.903	6.043

(1) Included in other items.—(2) Included in engine-crew wages.—(3) Estimated on basis of locomotive-miles, assuming six miles an hour in switching service.—(4) Estimated on basis of locomotive-miles and data per locomotive-mile.—(5) Estimated as difference between total and other items.—(6) Data not communicated by railroads.—(7) Data for these roads are for 600-hp. locomotives. Data of roads A to K are for 300-hp. locomotives.—(8) Double fixed charges are included in the total cost of operation for the reason that on road B each oil-electric locomotive replaced two steam locomotives doing the same work.

and also the difference in price of fuel oil. The latter fluctuated from 3.4 cents (road L) to 7.7 cents (road B) per gallon. On road B it dropped later to 4.3 cents. On the other roads it was about 5 to 6 cents per gallon. For steam locomotives the cost of fuel was 78.5 cents (road D) to \$1.783 (road L) an hour, depending upon the size of the locomotive, with prices for coal ranging from \$3.81 to \$7.48 a ton.

The average cost of fuel for 300-hp. oil-engine locomotives on roads A to K is 20.7 cents an hour, whereas the average corresponding figure for steam locomotives on those roads for which data are available is \$1.157 an hour, a saving of 95 cents an hour, or of 82.1 per cent. The corresponding figures for 600-hp. locomotives on roads L and M, and for steam locomotives on road L (no data for road M have been communicated), are 29.1 cents and \$1.783, representing a saving of 83.7 per cent. The average figures for all roads are 21.6 cents for oil-engine locomotives and \$1.295 for steam locomotives, with a saving of 83.4 per cent. Thus, the cost of fuel on oil-electric switching locomotives is less than one-sixth of that on steam locomotives doing the same work, resulting in a saving of \$1.08 an hour in favor of the oil-engine locomotive.

Column 6 shows that the cost of lubrication fluctuates between 4.9 and 11.9 cents an hour, compared with 1.4 and 8.6 cents an hour for steam locomotives. The averages are 6.9 cents and 3.0 cents an hour for oil-engine and steam locomotives respectively, making a difference of 3.9 cents an hour in favor of the steam locomotive and reducing by that amount the saving in fuel cost on the oil-engine locomotive.

The cost of water and fuel for heating represented by columns 7 is negligible.

Column 8 shows a rather wide variation in cost of

of work, with a variation for different roads between \$2.103 (road K) to \$3.527 (road L), and an average of \$2.852 (Table VI). For steam locomotives, the fluctuation is from \$3.370 (road E) to \$5.295 (road C), and the average is \$4.581, or \$1.729 more than the average net operating cost of the oil-electric locomotives. The fixed charges on investment (interest and depreciation) so far have not been considered.

The corresponding average figures for 300-hp. locomotives only on roads A to K are \$2.809 and \$4.424, with a difference of \$1.615 in favor of the oil-electric locomotive.

#### Fixed Charges an Important Factor

The most interesting columns are 11 to 13, as they show how the saving of the oil-engine locomotive is partly offset by the higher fixed charges on investment. It can be seen that interest and depreciation as estimated by the railroads vary in wide limits for oil-electric locomotives from \$1.085 to \$3.685 an hour, depending partly upon the utilization of locomotives, but mostly upon the variation in the rate of interest and depreciation considered by the railroad as a fair basis for calculation. For steam locomotives the variation is still larger—from 6.7 to 96.1 cents an hour, depending also, in addition to the above-mentioned two causes, upon the price of the steam locomotive built some twenty or thirty years ago. The average of fixed charges per hour of work is about one dollar higher for the oil-electric locomotive than for the steam locomotive, reducing the average economy obtained from the operation of the former from \$1.729 to about 80 cents an hour as compared with the latter.

A closer analysis of the figures for each road separately would be of value for the proper understand-

ing of this important phase of the exploitation of the oil-electric locomotive.

Road A assumes a six per cent rate for interest on the investment and a three per cent rate for depreciation. These charges for the reported period of time amount to \$11,101.32, or \$1.603 an hour for the oil-electric locomotive, and to only \$129.65, or 6.7 cents an hour for the steam locomotive. The latter, which, is the one actually replaced by the oil-electric locomotive, was an old locomotive built in 1865 and the cost of the locomotive was assumed by the railroad to be \$2,881.05. The comparison, therefore, is not in favor of the oil-electric locomotive, for which the railroad paid about \$61,000 several years ago, and the result is that an economy of \$1.399 in the cost of operation is turned into a net loss of 13.7 cents an hour.

Road B has a similar scale of rates—six per cent for interest and two and one-half per cent for depreciation—but the steam locomotives replaced by the oil-electrics are of more recent origin, and their value is placed at \$20,000. Besides, the oil-electrics are being utilized to the extent of sixteen hours a day and their fixed charges amount, therefore, to only \$1.157 an hour. On the other hand, the steam locomotives could not be utilized more than twelve hours a day and their fixed charges, in spite of the lower cost of the locomotives, went up to 78.7 cents an hour. Moreover, in view of the greater availability of the oil-electric locomotive, each of them replaced two steam engines. As a result, the total operating cost per hour of work of the oil-electric locomotives, including fixed charges, amounted to \$3.467 + \$1.157 = \$4.663, and for the steam locomotives, to \$4.345 + 0.787 + 0.787 =

responding fixed charges amount to only 96.1 cents an hour, which, while high for a steam engine, is much lower than those for the oil-electric locomotives and, notwithstanding the enormous saving of the oil-electric locomotive in operating cost (about \$2.39 an hour), the total cost of operation of the latter is in this particular case 28 cents an hour more than that of the steam locomotive.

Roads D and E have the same rates for interest (six per cent) and almost the same rates for depreciation (three and one-half and three per cent). The prices of the steam locomotive are about the same (\$25,000, \$20,000 and \$22,500), although the utilization of the locomotives is different—about eight hours a day on road D and sixteen hours on road E. The fixed charges per hour are, accordingly, on the two respective roads \$2.085 and \$1.085 for the oil-electric locomotives, and 82.5 and 53.8 cents for the steam locomotives. However, on road D the total cost of operating of the oil-electric is more expensive by 35 cents an hour than that of the steam locomotive, this in view of the low utilization of the locomotives in this kind of work. On road E the total operation costs are almost identical for the oil-electric and steam, probably because the hourly cost of operation of the steam locomotive (column 10) is very low. As the latter cost is not itemized on that road, a further analysis is not possible.

On road K the rate of depreciation is three per cent, the same as on the majority of other roads, but the rate of interest is only four and one-half per cent instead of six. On the other hand, the price of the steam locomotives replaced by the oil-electrics is \$7,000 each, and the utilization of locomotives in this service

Table VI—Cost of Operation per One Locomotive-Hour of Oil-Electric Switching Locomotives in Comparison with Steam Locomotives Doing the Same Work

1	2	3	4	5	6	7	8	10	12	13
Railroad (conventional designation)	No. of locomotive-hours	Engine-crew wages	Enginehouse expenses and supplies	Cost of fuel for main engine and auxiliaries	Cost of lubricating oil and other lubricants	Cost of water and fuel for heating	Cost of inspection and repairs (maintenance)	Total cost of operation	Fixed charges (interest and depreciation)	Total cost of operation including fixed charges
OIL-ELECTRIC LOCOMOTIVES										
A	6,924	\$1.079	\$0.519	\$0.168	\$0.036	\$0.004	\$0.689	\$2.495	\$1.603	\$4.098
B	14,762	1.543	0.553	0.216	0.073	(1)	1.089	3.476	1.157	4.663
C	9,123	1.228	0.603	0.212	0.060	0.024	0.780	2.908	3.685	6.538
D	5,185	0.983	0.081	0.215	0.088	0.007	1.076	2.448	2.085	4.533
E	16,871	1.625	(2)	0.242	0.078	0.001	0.819	2.765	1.085	3.850
G	3,225	0.992	0.063	0.236	0.053	(1)	1.621	2.964	(6)	....
K	9,140	0.944	(2)	0.137	0.49	0.022	0.951	2.103	1.656	3.760
L(7)	4,985(3)	1.654	0.136	0.268	0.119	0.012	1.339	3.527	1.970	5.497
M(7)	2,560	1.653	0.061	0.335	0.054	(1)	0.520	2.624	(6)	....
Average of totals	....	1.350	0.257	0.216	0.069	0.008	0.952	2.852	1.727	4.579
STEAM LOCOMOTIVES										
A	1,929	\$1.886	\$0.008	\$0.890	\$0.020	\$....	\$1.090	\$3.894	\$0.067	\$3.961
B	2,183	1.631	0.629	1.064	0.030	0.040	0.951	4.345	0.787	5.918(8)
C	5,494	2.078	0.638	1.493	0.026	0.063	0.997	5.295	0.961	6.256
D	5,185	1.756	0.059	0.785	0.014	0.015	0.726	3.355	0.825	4.180
E	(6)	(6)	(6)	(6)	(6)	(6)	(6)	3.370(9)	0.538(9)	3.908(9)
K	2,909	1.770	0.822	1.431	0.086	0.066	0.920	5.096	0.181	5.276
L	4,985(5)	1.824(4)	0.548(4)	1.783(4)	0.024(4)	0.029(4)	0.932(4)	5.140	0.903	6.043
Average of totals	....	1.850	0.455	1.295	0.030	0.037	0.914	4.581	0.724	5.382(8)

(1) Included in other items.—(2) Included in engine-crew wages.—(3) Estimated on basis of locomotive-miles, assuming six miles an hour in switching service.—(4) Estimated on basis of data per locomotive-mile.—(5) For calculation of averages, the number of locomotive-hours is assumed to be equal to that of the oil-electric locomotives on the same road.—(6) Data not communicated by railroads.—(7) Data for these roads are for 600-hp. locomotives. Data of roads A to K are for 300-hp. locomotives.—(8) Double fixed charges are included in the total cost of operation for road B for the reason that on this road each oil-electric locomotive replaced two steam locomotives doing the same work.—(9) Not included in the average below.

\$5.918, representing a net saving of \$1.56 in favor of the oil-electric for each hour of work.

Road C assumed a higher rate of depreciation; namely, five per cent, calculating interest at the usual rate of six per cent. At the same time the utilization of the oil-electric locomotive was only about six hours a day. This resulted in very high fixed charges, amounting to \$3.685 an hour, more than thrice that on road B. The steam engines with which the oil-electric locomotives are compared were built in 1898 and 1903 at the price of \$16,000 each. The cor-

is about nine hours a day. In view of this, the difference between fixed charges for the oil-electric and steam locomotives is appreciable; namely, \$1,475 notwithstanding the low interest rate. However, the saving in the cost of operation by the oil-electric is so high (about \$3 an hour) that the net saving amounts to \$1.52 an hour.

On road L a 600-hp. locomotive is utilized sixteen hours a day and, although the cost of the steam locomotive built in 1918 has been estimated by the reporter, in accordance with the general dimensions given



by the railroad, to be as high as \$50,000, the fixed charges for the oil-electric locomotive exceed those for the steam locomotive by more than \$1 an hour, reducing the economy in favor of the oil-electric to 55 cents.

No fixed charge estimate has been obtained from road M.

#### The Effect of High Availability

For the purpose of comparison, it is desirable to establish a uniform way of figuring fixed charges. The average cost of operation of a 300-hp. oil-electric switching locomotive has been found to give a difference of \$1.615 in favor of the oil-electric locomotive. Assuming on the basis of past experience that the cost of an oil-electric locomotive of this size is \$60,000 and that the price of a corresponding new steam locomotive is \$25,000 and taking further as a fair rate of fixed charges six per cent for interest and four per cent for depreciation, we obtain a difference of \$60,000 — \$25,000)  $\times$  0.10 = \$3,500 a year. In order to offset this extra cost by the economy of the oil-electric, it is necessary to have the latter in operation at least

3,500  
1.615

2,167 hours a year, or 7.22 hours a day, figuring on 300 days a year. If an oil-electric locomotive is operated more than 7.22 hours a day, there is a net gain in its favor. If less, then the oil-electric locomotive involves a loss.

It is not unusual for an oil-electric locomotive to be in service sixteen hours a day and 300 days a year, a total of 4,800 hours a year. The amount which such a locomotive can earn can be estimated as follows:

	Oil-Electric Locomotive	Steam Locomotive
Operating cost an hour.....	\$2.809	\$4.424
Operating cost a year.....	$\$2.809 \times 4,800 = \$13,483.20$	$\$4.424 \times 4,800 = \$21,235.20$
Cost of locomotive .....	\$60,000	\$25,000
Fixed charges (10 per cent on the investment) .....	\$6,000.00	\$2,500.00
Total cost of operation.....	\$19,483.20	\$23,735.20
Net gain per year.....	\$4,252.00	

This amount is further increased to \$6,722 a year if the oil-electric locomotive, working sixteen hours a day, replaces two steam locomotives. The gains can be still greater if the locomotive works twenty-four hours a day, six days a week, as the case is on some railroads. The greater availability, meaning the possibility of continuous service on the part of the oil-electric locomotive, permits the above-mentioned sixteen and twenty-four hours' utilization and the replacement of at least two steam locomotives by one oil-electric. This availability is of great importance.

On the other hand, there are things which may influence unfavorably the results of these and similar calculations. If the railroad has at its disposal old steam locomotives, the values of which have been either completely written off or the cost of which was originally very low, the fixed charges of the steam locomotives are practically nil, and the difference between interest on investment and depreciation of the oil-electric and the steam locomotive goes up accordingly. This explains the variety of figures in column 13 of Table VI.

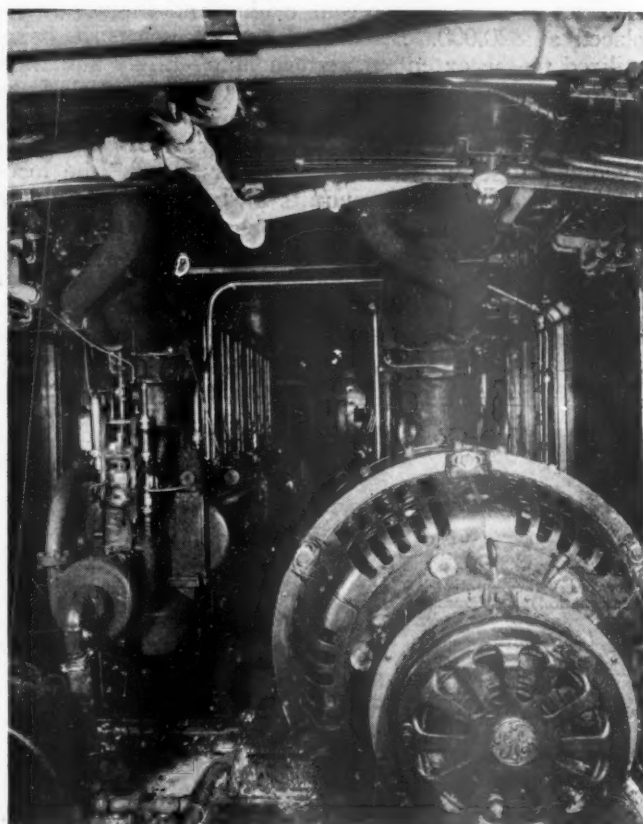
#### Established Trends in America

The experience with oil-electric locomotives on American roads indicates certain trends in the design and operation of oil-engine locomotives which it may not be amiss to discuss in the light of the information received from the railroads.

All Diesel engines in use at present are of the high-speed, light-weight type, the speed varying between

500 and 800 r.p.m. The only exception is the New York Central McIntosh & Seymour engine which has a speed of 310 r.p.m., but it is doubtful that this practice will be continued, as the McIntosh & Seymour Corporation is now building locomotive engines to operate at 700 and 800 r.p.m.

The reason for raising the speed is obviously the desire to reduce the weight of the oil engine and of the generator. It is too early to establish what weights should be considered most economical. With the exception of the Beardmore engines, which weigh about 20 lb. per hp., the weight of locomotive oil engines in service is in the neighborhood of 55 to 63 lb. per hp. This is considered by some builders to be too high, and attempts are now being made to develop engines weighing about 40 to 45 lb. per hp., or even below 40 lb. The high-speed engines require certain refinements in design and construction, the use of more expensive



Engine Room in a 600-Hp. Oil-Electric Locomotive with a Double Power Plant

alloys, such as aluminum, cast steel, etc., and as a consequence they are not cheaper for the same power, in spite of their light weight. While not yet definitely proved by actual figures, the indications are that the maintenance of high-speed engines is more expensive than that of the lower-speed engines. This may also prove to be true for the rate of depreciation. In addition to that, it seems useless to go to extremes in lightening the engines in cases where weight is needed for adhesion. The weight of the moderate-speed engine usually represents from twelve to eighteen per cent of the total weight of the locomotive. Thus, if the weight of the engine could be reduced by as much as fifty per cent, this would amount to only six to nine per cent of the total weight of the locomotive, which may not be of importance in all cases. For switching and partly for freight service, some extra weight may be desirable, and in other cases it is very probable that

the saving in the cost of the mechanical parts of the locomotive due to the lighter engine would be offset by the higher price of the high-speed oil engine.

There is, therefore, an economical lower limit to the weight of the locomotive oil-engine. The Canadian National 2,660-hp. locomotive with two Beardmore light-weight engines is of great interest and importance, and when figures of total cost of operation of these locomotives, including fixed charges, become available, they will undoubtedly be of the greatest value. At present the author's opinion, based on the available experience with switching locomotives, is that the most economical weight for these purposes lies somewhere between 40 and 50 lb. per hp. It is also his feeling that for road service the weight should be between 30 and 40 lb., the lower figures applying to passenger service.

In conformity with the above, it is also the author's opinion that the speeds of the oil engines will in the future probably vary between 500 and 800 r.p.m., the lower figures for engines of higher output.

As to the number and location of cylinders, the straight six-cylinder vertical type and the twelve-cylinder V-type are in use, the former predominating. Eight-cylinder vertical engines are not used at all on locomotives, probably for the reason of their inferior running qualities with regard to balancing and critical speeds. The twelve-cylinder V-type has the advantage of resulting in a shorter engine with smaller cylinders which do not require piston cooling. The V-type has, therefore, some possibilities for large power, although the straight vertical type will always have the advantages of simplicity and better accessibility.

All oil-engines in use on American locomotives are of the four-cycle type, probably for the reason that there has not yet been developed a satisfactory high-speed two-cycle engine.

With the exception of the McIntosh & Seymour engines, all oil engines in America are of the solid-injection type, which seems to have already conquered the railroad field. It is very unlikely that air-injection type engines will be built for locomotives in the United States, at least in the near future. The McIntosh & Seymour Corporation itself is developing at present solid-injection high-speed engines for locomotives.

#### The Locomotive Must Be Smokeless

Of great importance for the development of the locomotive oil engine is the question of the clearness of the exhaust. The possibilities of the two-stroke cycle in competition with the four-stroke cycle, high speeds versus moderate speeds, solid injection as compared with air injection will always depend on the operation of these types with respect to smokelessness. It may not be necessary to have an absolutely invisible exhaust, but an exhaust which would not be objectionable to city authorities is of great importance. For service on city tracks and in terminals within city limits the question of smokelessness will be of great consequence.

The two-cycle properly supercharged engine may be superior with regard to smokelessness to a four-cycle engine. The experience with the Danish Burmeister & Wain engines seems to prove this. A well supercharged four-cycle engine may also give a reasonably clear exhaust. In this respect the new four-cycle 1,000-b.hp. Krupp engine installed on the Baldwin locomotive, with supercharging, will be of great interest.

In the opinion of the reporter, the present trend in development of the locomotive oil engine is to settle on the six-cylinder, vertical, reasonably high-speed, solid-injection, four-cycle engine, with further studies of the possibilities of the V-type arrangement, two-stroke cycle and supercharging, for the larger power.

## Looking Backward

### Fifty Years Ago

The track is now all laid on the Louisiana Western [now part of the Southern Pacific], completing the railroad line from New Orleans, La., to Houston, Tex. The first through freight trains are to leave New Orleans and Houston on August 28, and the first passenger trains on August 30. This line is made up of three roads [all now part of the Southern Pacific], the Morgan's Louisiana & Texas, from Algiers, opposite New Orleans, to Vermillionville, 143 miles; the Louisiana Western, from Vermillionville, La., to Orange, Tex., 106 miles, and the Texas & New Orleans, from Orange to Houston, 108 miles.—*Railway Age*, September 2, 1880.

The announcement that the Delaware, Lackawanna & Western had decided to construct an extension from Binghamton, N. Y., northwest to Buffalo, about 190 miles, with a branch to Rochester, has excited a great deal of commotion in Wall street. Articles of incorporation were filed on August 24 for the New York, Lackawanna & Western, the subsidiary which will construct the extension, with a capitalization of \$10,000,000. It is planned to provide the Lackawanna with a shorter route between New York and Buffalo than those of either the Erie or the New York Central. The distance by the Erie is 434 miles, by the New York Central it is 441 miles and by the Lackawanna it is proposed to be 400 miles.—*Railway Age*, September 2, 1880.

### Twenty-Five Years Ago

Charles H. Hix, superintendent of the First division of the Seaboard Air Line, has been appointed general superintendent of that road, with headquarters at Portsmouth, Va.—*Railway Age*, September 1, 1905.

The permanence of the 18-hour train between Chicago and New York, on the Pennsylvania, appears to be confirmed by the order for four new trains of four cars each from the Pullman Company. The trains will consist of one combined baggage and club car, one dining car and two sleepers. The club car contains a barber shop and a bathroom finished in white rubber tiling.—*Railway Age*, September 1, 1905.

The western roads have reached a settlement of the grain-rate war which was precipitated when the Chicago Great Western made a reduction of 1½ cents per 100 lb. from Missouri river points to offset alleged secret elevator allowances made by other roads. The new rates will become effective on October 1 and amount to a reduction of from ½ cent to 2¼ cents per 100 lb. under the old rate. It was also agreed that only one elevator allowance, of 1¼ cents per 100 lb., should be made by any road.—*Railway Age*, September 1, 1905.

### Ten Years Ago

E. C. Bagwell, superintendent of the East Carolina division of the Seaboard Air Line at Charleston, S. C., has been transferred to the Alabama division at Savannah, Ga. Silas Zwright, assistant mechanical superintendent of the Northern Pacific at St. Paul, Minn., has been promoted to mechanical superintendent of the lines east of Paradise, Mont., with headquarters at the same point.—*Railway Age*, August 27, 1920.

More freight was handled by the railroads during the week ending August 7 than during any previous week this year. The record for the week is only about 5,000 cars below the high mark of 1918 and three districts, the Southern, Central Western and Southwestern, show records better than the corresponding week of 1918. The Southern district has been doing better than 1918 for the past four weeks.—*Railway Age*, August 27, 1920.



## Communications and Books

### Unregulated Business, Not the Railroads, Need Investigation

TO THE EDITOR:

I saw in the paper this morning that the Interstate Commerce Commission is going to look into the pleas of fruit growers of California for a reduction in rates for shipping fruit from California. What they should look into is the price they ask for oranges in Erie, Pa. It is a crime the price they ask compared with past years—oranges 35 and 40 cents a dozen that in the past could be bought 13 for a quarter. It shows up all the more when all other commodities have gone down in price. It seems to me that the railways are always being made the goat. It is time they fought for their rights—hence this letter to you, from a railroad stockholder.

CHARLES J. THURBON.

### Display of Station Names

NEW YORK, N. Y.

TO THE EDITOR:

American railways are, in some respects, far in advance of those of European countries, but there is one feature which foreign roads cover much better than we do and that is the display of station names. In England, for example, the station name will be found not only on the station structure itself but on the platforms, usually in several places, and stencilled on the lamps, this latter being particularly helpful at night.

There are some exceptions to the rule in this country, but often, if the station is not announced, the passenger has to make hurried inquiry to assure himself that he is not going by his destination. At night it is harder still to tell whether he has reached his station.

It will greatly improve matters if station signs are illuminated at night and if the station names appear on the platforms and are stencilled on the lamps.

Perhaps the American Railway Association might use its influence in this direction.

M.

### American Locomotive Design

CHICAGO.

TO THE EDITOR:

As regards the engineering knowledge required for the designing and maintenance on American railroads, it is quite likely that the views expressed in your recent editorial on "What can be learned from European practice" are correct, particularly as regards locomotive design.

The steam locomotive has served us well for years and doubtless will for many to come, despite the fact that it uses much coal and water, dispensed with in some other forms used to apply motive power.

It is interesting to note that somewhat of an evolution is also taking place in the marine world to meet a desire for greater efficiency of steam plants aboard vessels, and that much of the medium and lighter tonnage being built employs internal combustion power, thus dispensing with boiler equipment. This, in a way, corresponds to railroad use of internal combustion power for switching, branch line and other light operating work. Let it be observed, however, that the question of allowable weight on board ship is not comparable with that on locomotives, and the needful horsepower for heavy locomotives cannot, or, at least, has not thus far, been approached by internal combustion power design.

Marine practice is also seeking greater efficiency of steam plants by using higher pressures, which, with compounding, the use of turbines, etc., is getting results in heavy tonnage.

In the steam locomotive field, we are apparently tied and bound to the use of simple, reciprocating engines. Every phase and modification of compound locomotives has failed to comply with the standard of operating practice demanded on our railroads. Compounding, beyond the limits of the cross type,

requires the use of cranked axles—*persona non grata* in the annals of the A. R. A. Mechanical Division.

A test at Altoona of a conventional type of locomotive boiler carrying 200 lb. steam pressure and a Type-A superheater on a simple engine showed superheat in the exhaust from 35 deg. F. at light work up to 132 deg. at heavy work, or an average of over 88 deg. F. for the 11 runs at various speeds and cut-offs. No doubt some superheat is of value in maintaining the fluidity and release of exhaust steam, but what is the limit of deliberate, economical waste of heat up the stack of a simple locomotive? Do we get a proper return for the heat expended in high pressures and superheat when used in simple cylinders and exhausted at even higher temperatures than in the above concrete example?

Germany has succeeded in capturing the blue ribbon in the marine record of speed and efficiency on the Atlantic, long held by England, and it is interesting also to note what she is doing in locomotive experimentation.

"Engineering Progress" of Berlin, in the August, 1930, issue, describes the Schwartzkopff-Löffler 4-6-2 passenger ultra-high pressure locomotive, now being tested in service. This locomotive uses steam of 1,700 lb. pressure in two high-pressure cylinders of 8.6 in. by 26 in., and 210 lb. in a low pressure cylinder 23.5 in. by 26 in. Thus, to gain a theoretical 47-per cent saving in fuel, as compared with modern superheated steam locomotives, this locomotive is compounded and utilizes the highest recorded steam pressure used in reciprocating engines, whether on land or sea.

Whatever the success of this extreme and radical departure in locomotive design, the lesson for us is the example of a direct effort, as against our rather haphazard methods in locomotive development.

As a matter of fact, our improved locomotive records of recent years have been the results of better operating conditions, rather than of design, and there is ample scope for lots more of it. As regards design, we have a wealth of capital, of brains, testing plants, etc., from which, by concerted effort, many problems in this line are capable of solution.

C. A. SELEY,

Consulting Engineer, Locomotive Firebox Company.

### New Books

*Public Regulation of Competitive Practices*, prepared and published by the National Industrial Conference Board, New York City. 320 pages, 9 in. by 5¾ in. Bound in cloth. Price \$3.

This work, first published in November, 1925, now appears in its second edition, revised and considerably enlarged. The revision, according to the preface, was "made necessary by rapid and significant developments in public policy in this sphere, particularly by the evolution of the trade practice conference procedure of the Federal Trade Commission and by certain notable court decisions affecting competitive practices."

After its opening chapters provide the background for the study the present edition proceeds to discuss "the real substance of the regulation by government of the modes of market conduct pursued by private enterprises." In this latter discussion price policies, sales promotion policies and trade relations policies of business concerns are reviewed in an analysis of the rules and doctrines which go to make up current public policy regarding the conduct of trade. New procedure developed since 1925 is next considered while a final chapter lists the advantages and disadvantages of the government's present regulatory policy "in the light of the actual situation." It is suggested that this latter "may lead to the formulation of some general conclusions regarding the soundness of existing anti-trust policy in its application to the control of competitive practices." A summary record of Federal Trade Commission Proceedings and a bibliography of documents, etc., issued by that commission are included in appendices in a manner convenient for ready reference.

*Solutions to Questions, Part II, Examinations of the Government of India Railway Subordinate Accounts Service*, by L. V. Gopalan, Accountant, Madras & Southern Mahratta Railway Co., Ltd., India. 256 pages, 5 in. by 8 1/4 in. Bound in cloth. Published by The Imperial Printing Works, 23 Davidson Street, Madras, India.

This volume, written principally for student accountants, includes the various questions asked in promotional examinations for the Railway Subordinate Accounts Service of the Government of India for the years from 1920 to 1928, inclusive, with the exception of 1922 and 1924, together with solutions to those questions. The plan of the book is especially commendable, the questions being grouped by major subjects and also by more detailed subheadings, with the answers, each bearing the same number as the question to which it refers, arranged in a corresponding manner; solutions for each major subject immediately following the questions on the same topic, and forming together, a distinct section of the book. The answers themselves, while admirably concise, are sufficiently detailed to make the volume of real value either as a text or reference work, and are reinforced in many instances by quotations from or reference to rules or other writings on the same subject.

Because of natural differences between the railway accounting practices of the two countries, however, the volume will be of greatest interest to those American railway accountants who may wish to compare similarities or differences of accounting procedure in this and other countries.

*High Finance in the Sixties*, edited by Frederick C. Hicks. Illustrated. 410 pages, 9 1/4 in. by 6 in. Bound in cloth. Published by the Yale University Press, New Haven, Conn. Price \$5.

This is a compilation of essays first published around the 70's and concerned mainly with the early history of the Erie and with the hectic financial and legal battles over its control. It opens with Charles Francis Adams, Jr.'s classic, "A Chapter of Erie," first published in the North American Review of July, 1869, and includes also "An Erie Raid," written by the same author and first published in the North American Review of April, 1871. "The New York Gold Conspiracy" by his brother, Henry Adams, is also revived—this was first published in the Westminster Review (England) in October, 1870. Other pieces included are: "The Lawyer and His Clients," by Albert Stickney (first published in the North American Review of April, 1871); "An Inquiry into the Albany and Susquehanna Railroad Litigations of 1869 and Mr. David Dudley Field's Connection Therewith," by George Ticknor Curtis (reprinted from the second edition, published by D. Appleton & Co., 1871); "A Great Lawsuit and a Field Fight," by Jeremiah S. Black (first published in the Galaxy of March, 1872) and "The Truth of a 'Great Lawsuit,'" by Albert Steckney (first published in the Galaxy of October, 1872).

In an introduction which makes no less fascinating reading than the essays themselves, Mr. Hicks, the editor, calls the period of these great legal and financial battles—the decade following the Civil War—a time "of organized lawlessness under the forms of law, of reckless gambling with corporate securities as tools, of panics and of 'corners' in stock and in gold. The manipulators, fearless of public opinion, unrestrained and even aided by judges, lawmakers, and executives, treated investors' money as their own to repair their fortunes or destroy those of rival operators." The leading characters in the drama, Mr. Hicks lists as follows: Daniel Drew, 'speculative director'; Commodore Vanderbilt, giving up steamboating at the age of seventy speedily to become railroad king; Jay Gould, wizard of Wall Street; James Fisk, Napoleon of finance; William Tweed, Tammany boss; George G. Barnard, Tweed and Erie ring judge; Joseph H. Ramsey, railroad promoter and David Dudley Field, eminent lawyer.

The foregoing line-up of characters prompts Mr. Hicks to suggest that "So fitted by nature for narration and biography are the episodes and the characters that their temptation to modern writers has become irresistible." Despite this, however, a re-reading of these invigorating essays is sufficient to bring agreement with Mr. Hicks' next suggestion that "the story will never be better told than it was nearly sixty years ago by the two brothers Adams."

## Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

### Books and Pamphlets

*Earning Power of Railroads—Twenty-Fifth Issue*, compiled and edited by Floyd W. Mundy. "As a necessary preliminary to the discussion which follows, it must be stated that this book treats chiefly of the earning power of railroads, and deals but little with those features alike most essential to investors—the traffic resources and the financial and physical condition of the railroads . . ." p. 9. New feature is the inclusion of twenty maps indicating the railroad consolidations as outlined by the Interstate Commerce Commission last December. 703 p. Pub. by Jas. H. Oliphant & Co., New York City. Apply.

*Pipe Line Companies Year Ended December 31, 1929*, compiled by Bureau of Statistics, Interstate Commerce Commission. "Selected financial and operating data from annual reports." Statement No. 30104 (File No. 86-A-3). 7 p. Issued by Interstate Commerce Commission, Washington, D. C. Apply.

*Tabulation of Statistics Pertaining to Signals, Automatic Train Control, and Telegraph and Telephone for Transmission of Train Orders As Used on the Railroads of the United States, January 1, 1930*, compiled by the Bureau of Safety, Interstate Commerce Commission. "... notable changes . . ." p. 3. 19 p. Pub. by U. S. Govt. Print. Off., Washington, D. C., 10 cents.

*Universal Directory of Railway Officials. 1930*, compiled from official sources under the direction of the Editor of the Railway Gazette. 36th year of publication. Contains names, addresses and memberships of various transportation commissions, and the names and addresses of officials of railways in the various countries of the world, with note of headquarters, mileage, gages, motive-power and equipment. 390 p. Pub. by Directory Publishing Company, Ltd., London, England. 20 shillings.

### Periodical Articles

*Aim Lower and Go Higher—"It's a Losing Game to Hitch Your Wagon to a Star" says William B. Storey*. Interview by Neil M. Clark with the President of the Santa Fe. Illustrated. American Magazine, August 1930, p. 19-21, 126.

*The Auto Improves the Railroads*, by Labert St. Clair. Interview with Paul Shoup, President of the Southern Pacific Company. Nation's Business, September 1930, p. 170, 172, 174.

*Driving the Continent's Fastest Train*, by L. B. N. Gnaedinger. "The express is to run the 334 miles from Montreal to Toronto in 360 minutes, or at an average of 55 2/3 miles an hour. Its greatest momentum will be attained on the 126 miles between Montreal and Brockville, which are to be covered in 120 minutes. Of these 126 miles, 122 are to be covered in 113 minutes—a flying start in a schedule which takes the International Limited over the 848 miles to Chicago in eighteen hours and fifteen minutes." p. 24. World's Work, September 1930, p. 24-28, 86-88.

*Muddlers of Public Opinion*, by A. W. Somerville. A short story on news values—railroad construction in spite of heavy difficulties vs. the sentimental adventures of an old man. Saturday Evening Post, August 23, 1930, p. 34, 36, 125-129.

*Rails and Bus Competition*, by Frederick Hanssen. Includes map of Intrastate motor bus lines. Financial World, August 20, 1930, p. 6, 18-19.

*Railroad Consolidation. Duty and Power of the Interstate Commerce Commission*, by Richard V. Taylor. Manufacturers' Record, August 14, 1930, p. 59-60.

*The 1920 Amendment to the Interstate Commerce Act*, by Herbert N. DeWolfe. United States Law Review, August 1930, p. 413-423.

*Traffic Delays Piled End to End*, by Raymond S. Tompkins. "There are solemn scientific business truths to be gleaned from the study of a coal truck dumping coal into a cellar window while parked athwart a heavy traffic stream . . . Picking out the grade-crossing delays involving 'John Smith, Car Rider' . . . we find him held up 58,384 minutes more, or 973 hours, or 40 days, while trainloads of hogs crawled past to Chicago or shifting engines waltzed back and forth." Nation's Business, September 1930, p. 107.



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# *Odds and Ends of Railroading*

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## **Fifty-Year Men**

The Louisville & Nashville offers a third representative to the delegation of those who have held the same job in the same place for 50 years. This one is Dr. James H. Letcher, who has been company surgeon at Henderson, Ky., since May 1, 1880.

## **Shortest Safety Speech**

Safety speeches are inclined to run to some length, and the palm for the shortest one should probably go to W. S. Wollner, general safety agent, Northwestern Pacific. As a part of the Southern Pacific program, over KFRC at San Francisco recently, Wollner delivered himself of a 314-word safety speech in one minute flat, thus rivaling even Floyd Gibbons for speed in diction.

## **The Milwaukee's Twin Roadmasters**

Another oddity in railroading families came to light recently with the promotion of Roy Minton to the position of roadmaster on the Dubuque division of the Chicago, Milwaukee, St. Paul & Pacific. Two years earlier Roy's twin brother, Ralph, was advanced to roadmaster on the Iowa & Dakota division. The Mintons both entered the service of the Milwaukee on the Wisconsin Valley division at Minocqua, Wis.

## **Beg Your Pardon**

The caption under the illustration of the three-level crossing at Richmond, Va., in the August 9 issue, stated that the upper railway was the Atlantic Coast Line. This was in error and should have read Chesapeake & Ohio. Our attention has been called to this by T. H. Greene, division engineer, C. & O., E. L. Smith, terminal trainmaster, C. & O., Benjamin Bell, editor, C. & O. magazine, and J. A. Haviland, operator, New York, Chicago & St. Louis.

## **Royal Railroad Coach for Sale by Austria**

A bargain is offered by the Austrian Federal Railways for anyone who desires to buy a railroad car formerly used by royalty. Austria, in empire days, had 60 of these luxurious conveyances, but with the break-up at the end of the war, all except four of them were handed over to neighboring nations. The one now offered for sale is 68 ft. long. It has a lounge, ten berths, hot water, wash room and kitchenette. It is described as especially suitable for week-end parties.

## **Another Ace**

E. J. Clancy of the voucher register bureau of the Baltimore & Ohio is elated, and naturally so. He shot a hole in one at the Carroll Park course in Baltimore. That's quite a feat, but several other railroaders have done it recently. What sets Clancy's performance above all others, though, is the fact that the distance, 262 yards, is the third longest on official record, the longest in Maryland, and the longest, Clancy claims, ever shot by a railroader. As if this were not enough, in the same round, Clancy shot an "eagle" two, on an even longer hole, after rimming the cup on his first shot, the ball stopping within three inches of the cup.

## **Giant Air Beacon To Be Installed on New Southern Pacific Bridge**

Completion this fall of Southern Pacific's new \$12,000,000 railroad bridge across the Suisan bay, will not only mark an outstanding development in transportation facilities for that company, but will provide the foundation for one more giant beacon to guide travelers of the air. The Southern Pacific has applied to the aviation section of the United States Department

of Commerce for approval of a lighting system to be installed on the bridge. The bridge, which is expected to be completed about Thanksgiving Day, will have a maximum elevation of 156 feet above mean low water, and the railroad seeks approval of a complete lighting system which will warn and guide aviators flying at night or during heavy fog. The central feature of this lighting system will be a 24-in., 2,000,000 candle-power, red light which will flash every 30 sec. Airway code lanterns will also be installed. The airway code lighting system, in turn, will be supplemented by a marine lighting system for ships plying the upper reaches of San Francisco Bay.

## **Floral Freight**

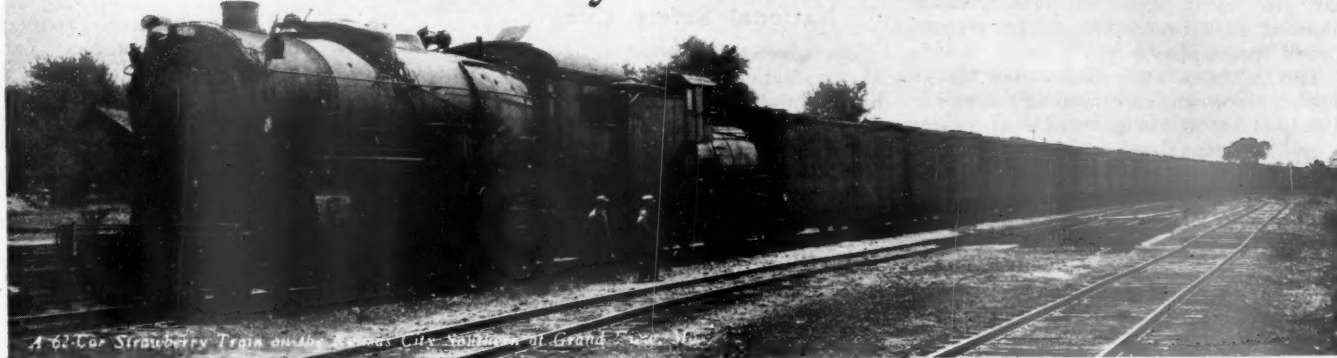
Part of the midnight freight now arriving at the big London and provincial stations is composed of hundreds of tons of cut flowers on their way to the early morning markets. These flowers come from the Scilly and Channel Islands, Penzance, Spalding, Holland and France, and in some cases have travelled hundreds of miles by sea and land. The transport arrangements, however, are such that within 24 hours of packing this floral freight is delivered to the various markets. It is of a highly perishable nature and is therefore conveyed by express passenger or "perishable" trains. In some cases where the traffic is very heavy, special boats and trains are run.

The season extends from January to Easter, commencing very early in the case of traffic from the south of France, and during the peak period in March and April over 100 tons, representing 6,000,000 blooms, arrive nightly at Covent Garden Market alone. The blooms, which consist chiefly of daffodils, narcissi, anemones, tulips, roses, violets, mimosa, etc., are picked while still in bud and carefully packed in wooden boxes, thus insuring their reaching the market in perfect condition. During a normal season, 4,000 to 5,000 tons of cut blooms arrive from the Continent, 3,000 tons from the Channel Islands, 1,700 tons from Spalding, and 1,100 tons from the Scilly Islands and Penzance district. These figures represent over 2,000,000 boxes containing 600,000,000 blooms.—*Railway Gazette* (London), reprinted from the *Railway Newsletter*.

## **Named Trains in Japan**

We are informed by a correspondent in Japan that it is proposed to adopt names for some of the principal mail and express trains on the Japanese Government Railways, with the idea that, to quote the *Japan Advertiser*, they will "give more personality to the trains," and be "more to the taste of the times." We gather that names which appear to us to be of a fancy type are likely to be used. Thus, it is suggested that "first and second-class express trains and the ordinary first and second-class trains will be called by such names as 'Tsubame', or the Swallow; 'Sakura', or the Cherry; 'Fuji', or Mt. Fuji, instead of train No. 1, No. 2, or whatever other number such train may have at present." Other suggestions are: "Hikari", or Light; "Kaze", or Wind; "Hibari", or Sparrow; and the like. The final decision is, however, to be put to a general vote of railway officers. The *Japan Advertiser* further states that the authorities are said to be desirous of having such names in couplets as far as possible, such as the plum and cherry or the pine and bamboo, and others of a similar nature. "The adoption of this plan in the naming of trains by such names as the 'Swallow Train', the 'Bamboo Train', or the 'Pine Train', is thought to be a great novelty as well as to be democratic." Special names may also be adopted for trains concerned with the traffic of particular localities. It was suggested that all trains should be so named, but it was decided that for the time being only certain trains should be thus designated, though the practice may be extended. It is proposed to place the name boards prominently at the rear of the "designation car" of each train, "so the people may know."—*Pullman Magazine*.

# NEWS of the WEEK



THE FREIGHT CLAIM DIVISION of the American Railway Association will hold its next annual meeting at Louisville, Ky., on May 26, 27, 28, 29, 1931.

THE LOUISIANA CAR DEPARTMENT ASSOCIATION will hold its next meeting at Hotel Monteleone, New Orleans, La., on Thursday evening, September 18. The speaker will be H. H. Burns, of the Westinghouse Airbrake Company.

THE ST. LOUIS (MO.) RAILWAY CLUB at its meeting on Friday evening, September 12, at Hotel Statler, will listen to an address by the governor of Missouri, the Honorable Henry S. Caulfield.

THE RAILWAY CAR MEN'S CLUB OF PEORIA AND PEKIN will hold its next meeting at the Union Station, Peoria, Ill., on Monday evening, September 22. There will be a general discussion on the A. R. A. loading rules.

THE CAR FOREMEN'S ASSOCIATION OF ST. LOUIS, (MO.), will hold its next meeting on Tuesday evening, September 2, at the American Hotel Annex. Joe Marshall, of the American Railway Association, will speak on freight claim prevention.

THE CINCINNATI (OHIO) RAILWAY CLUB will hold its next meeting on Tuesday evening, September 9, at the Chamber of Commerce. There will be a paper on historic holy lands by John B. Kenna, of the Northwestern National Life Insurance Company.

THE NEW YORK RAILROAD CLUB will hold its next meeting on Friday evening, September 19, at the Engineering Societies Building, 29 West 39th Street, New York City. "Our Experiences in Saving Coal" will be the subject of a paper by Robert E. Woodruff, vice-president of the Erie.

THE CENTRAL RAILWAY CLUB OF BUFFALO (N. Y.) will hold its next meeting on Thursday evening, September 11, at Hotel Statler. A "flea circus" will be presented by Dr. Phillips Thomas of the Westinghouse Electric & Manufacturing Company. This will be ladies' night with dancing and a buffet luncheon. The "fleas" are electrons and Dr. Thomas will be assisted by "Rastus Robot," the most modern mechanical man.

THE RAILWAY CLUB OF GREENVILLE, (Pa.) will hold its next meeting on Tuesday evening, September 16, at Zion Reformed Church. E. S. Fitzsimmons of the Flannery Bolt Company will present a paper on inspection of flexible staybolts, illustrated by motion pictures.

HUGH DRAKE, secretary of the Nebraska State Railway Commission since 1928, has been appointed a member of that body to fill the unexpired term of John E. Curtiss, who has resigned. Mr. Drake will hold office until January, 1931, when either he, as Republican candidate for the office, or the Democratic candidate will be selected for the six-year term.

## New Cars and Locomotives

Class I railroads of the United States in the first seven months of 1930 placed 55,660 new freight cars in service, the Car Service Division of the American Railway Association announces; in the same period last year, 42,552. Of the total 28,616 were box cars, an increase of 8,069; of coal cars there were 21,463 compared with 14,475. There were 3,177 flat cars; 1,615 refrigerator cars; 488 stock cars, and 301 other miscellaneous cars.

The railroads on August 1 this year had 19,627 new freight cars on order compared with 36,335 cars on the same day last year and 14,704 on the same day two years ago.

The railroads placed in service in the first seven months this year 484 new locomotives compared with 371 in the same period in 1929. New locomotives on order on August 1 this year totaled 296 compared with 410 on the same day last year.

## The Moffat Tunnel

A group of Eastern bondholders of the Moffat tunnel on August 22 petitioned the United States district court at Denver, Colo., for a writ of mandamus to compel the Moffat tunnel commission to pay approximately \$500,000 interest, which is past due, on the \$8,750,000 issue of supplemental bonds used for construction of the tunnel. The petition also asks the appointment of a receiver to take charge of all tunnel taxes already collected. The district court has already issued an in-

junction, in compliance with an order of the Colorado supreme court, prohibiting the payment of any interest on these bonds pending the court determination of their legality.

## Signalmen's Officer Deplores Use of Strikes

The strike as a means of settling differences between employers and employees was condemned as obsolete by A. E. Lyon, assistant to the president of the Brotherhood of Railroad Signalmen of America, before the biennial convention of that organization at Denver, Colo., on August 20. When labor unions were in their infancy and were subjected to bitter hostility, as they struggled to establish themselves, a strike was the only method workers had to make their demands known to the public and to demonstrate their united strength to their employers, said Mr. Lyon.

"Strikes are enormously wasteful of time and money of both employers and employees," the speaker continued. "Railroad workers are so well organized today that they do not need to demonstrate their strength. It is well known. The recurrent readjustments in wages necessary between employers and employees can be made most economically through arbitration between representatives of each. Acts of Congress should serve to give the workers an increasing power in such arbitration. Strikes should be only a last resort and used when arbitration has failed and legislators have been appealed to in vain."

Mr. Lyon declared that "the workers' end of an increasingly larger share in the profits of production can best be gained through national legislation, "if labor organizations will bend their efforts towards electing to Congress men who will aid them."

## Suburban Wing of Broad Street Station Opens September 28

The new Broad Street suburban station of the Pennsylvania at Fifteenth street and the Parkway, Philadelphia, Pa., is to be opened for suburban traffic on September 28, according to a recent official announcement by that company. After that date, about 28,000 Philadelphia com-



muters who have been taking electric trains outbound to suburban points from the old Broad Street station will use the new underground terminal extending from Fifteenth to Eighteenth streets, although for a short time it may be necessary to divert some of the incoming morning rush hour traffic to the present Broad Street station.

The suburban wing of the new Philadelphia passenger terminal is approximately 1,000 ft. long by 200 ft. wide. Nine entrances and exits have been established at convenient points, while additional facilities of this nature will be provided in the future. The station layout, including seven tracks and four island platforms, has been built to meet all demands of the anticipated increase in traffic during the next 35 years.

At the present time about 2,000 men are working on the station, in order to complete it by the date set for the official opening.

### Views on Howell Bill

Additional expressions of opinion on the Howell bill, to substitute a "rate-base" plan for that of section 15a of the interstate commerce act, have been filed with the Senate committee on interstate commerce, at its request, by the American Short Line Railroad Association, the National Conference on Valuation of American Railroads, and by the Detroit Board of Commerce. Statements filed on behalf of the Association of Railway Executives, the National Industrial Traffic League and the National Association of Railroad and Public Utility Securities, opposing the provisions of the bill, have been reported in previous issues of the *Railway Age*.

Ben B. Cain, general counsel of the short line association, expresses doubt as to whether the provisions of the bill would be of practical value, although he says the recapture provisions of the present law have worked hardship and are manifestly of no value to the short lines. He said the formula proposed by the bill for arriving at a rate base instead of a value would substitute a legislative fiat for the rule upheld by the courts and that he believed this would be unconstitutional. He favored the idea of basing recapture on the average of a number of years. Provisions of the bill, he said, would seem to open the door to government ownership and would mark the beginning of the end of private control.

Donald R. Richberg, general counsel of the National Conference on Valuation, expressed approval of the underlying purpose of the bill, which he is credited with having helped to draft, and said there could be no intelligent dissent from the legislative policy of directing the commission to find a rate base instead of value as the basis for rate regulation. He ridiculed the objections made to the recapture provisions of the bill on the ground that they would lead to government ownership by saying that it is hardly conceivable that the government's share of the excess earnings would be sufficient to represent even a large minor-

ity interest, but that if the amount should be large enough to give the government a large interest in any railroad system in a few decades a pertinent question would be raised as to how failure to recapture "such enormous sums" could be justified.

### National Safety Congress

The nineteenth annual safety congress of the National Safety Council will be held at the William Penn Hotel, Pittsburgh, Pa., on September 30 to October 3. The Steam Railroad Section of the Congress will act on the following program:

#### TUESDAY MORNING

Resume of Year's Activities, General Chairman C. F. Larson, superintendent of safety, Missouri Pacific  
Safety Contest Methods, George H. Warfel, chairman Committee on Safety Contest Methods, assistant to general manager, Union Pacific  
Governmental Investigation of Fatal Railway Accidents, George Lovering, in charge of Accident Division, Bureau of Safety, Interstate Commerce Commission, Washington, D. C.  
Report of Committee on Prevention of Highway Crossing Accidents, C. L. LaFontaine, chairman, general safety supervisor, Great Northern  
Grade Crossing Accidents and Their Elimination, J. L. Walsh, superintendent of safety, Missouri-Kansas-Texas

#### TUESDAY AFTERNOON

Education—A Factor in Accident Prevention, P. E. Odell, vice-president, Gulf, Mobile & Northern  
Accident Prevention in the Stores Department, J. P. Kavanaugh, general storekeeper, Chesapeake & Ohio  
Safety for Bridge and Building Employees (Speaker to be announced)  
Hazards of Modern Power Maintenance of Way Equipment, A. E. Willahan, assistant engineer, Kansas City Southern

#### WEDNESDAY MORNING

How Can We Reduce Accidents to Employees Due to Being Struck and Run Over by Cars and Locomotives?, George H. Warfel, assistant to general manager, Union Pacific  
Overcoming the Hazards of Operating Hand Brakes, G. H. Hammond, assistant general safety agent, New York Central  
Accidents When Coupling and Uncoupling Cars and Locomotives, C. L. LaFontaine, general safety supervisor, Great Northern  
Election of Officers

#### WEDNESDAY LUNCHEON

Address, C. W. Galloway, vice-president, Baltimore & Ohio

#### WEDNESDAY AFTERNOON

Accident Causes and Remedies, T. H. Cartow, chairman, Committee on Accident Causes and Remedies, superintendent safety, Pennsylvania  
Head and Eye Protection for Welders (Speaker to be announced)  
Collapse and Fall of Objects in Shops, F. R. Bradford, superintendent of safety, Boston & Maine

Shop Burns and Falls, G. N. Kramerer, shop safety agent, Bessemer & Lake Erie

#### THURSDAY MORNING

Motor Car Accidents, D. G. Phillips, superintendent of safety, Wabash  
Handling Ties, Rails and Other Material, E. G. Evans, superintendent of safety, Louisville & Nashville  
An Accident Prevention Program for Linemen and Signalmen (speaker to be announced)  
Inspectors' Session

### Modern Fashions in the Cab

Shouting across the cab of a modern locomotive when traveling at 60 or 70 miles an hour, is not a particularly pleasant proceeding, even to men experienced in the practice, and E. S. McMillan, engineman on the Canadian National, instead of calling signals by word of mouth, makes a motion instead. Observing a clear signal he holds his left arm upright; and the fireman, having sighted the signal, replies with the same gesture. For caution the arm would be held at an angle of 45 degrees from vertical; and for stop it would be held horizontally.

This we learn from an article by L. B. N. Gnaedinger, writing in *World's Work*. Mr. Gnaedinger took a ride with Engineman McMillan on the International Limited, which regularly makes the 126 miles from Montreal to Brockville in 120 minutes.

Mr. Gnaedinger subsequently rode on the New York Central from New York City to Harmon and found, there, that in communicating with one another the enginemen and firemen use terminology in which color includes position; that is to say, when they see a vertical semaphore they shout "green"; a cautionary semaphore is termed "yellow" and horizontal "red."

### Political Interference with C.N.R. Montreal Station Plan

A difficult situation has arisen in connection with the construction of the new Canadian National Railways terminal in Montreal for which the Parliament of Canada two years ago voted \$50,000,000, to be spent at the rate of \$10,000,000 per year for five years.

So far only a few buildings have been razed for the site of the terminal on La-gauchetiere Street and for the extensive track approaches from the south and the west. No actual construction work has been commenced. The reason for this is that the present Mayor of Montreal, Camillien Houde, has waged a vigorous campaign against the prosecution of the work as planned by the railway company, and not so long ago conducted a mayoralty fight in which he denounced the various crossing plans and called for a new plan, the effect of which would be to rob the Canadian National of advantageous traffic facilities in different parts of the city. To all of this Sir Henry Thornton, president of the road, and his chief officers take strong exception and twice in the past ten days they have interviewed the government at Ottawa and declared that they wanted their plan proceeded with and that no abridgement of it would be tolerated by the railway.

What has complicated the situation is the fact that the act passed by Parliament approving the project and voting the money took from the Dominion Railway Board practically all the power or jurisdiction it might otherwise have exercised in the approval or disapproval of such plans, and all that remains for the Board to do in this case is to satisfy its own engineers that the street crossing projects, as their approval is applied for by the railway, meet their usual tests. Thus far less than one-half of the crossings have been approved by the Board, the railway not having asked for approval of the others pending further conferences with the city authorities.

To meet the present situation the new Prime Minister, the Hon. R. B. Bennett, has named a sub-committee of the Cabinet to deal with the problem and seek some settlement acceptable both to the city and to the railway. That sub-committee consists of: Hon. Robert J. Manion, Minister of Railways and Canals; Hon. Alfred Duranleau, Minister of Marine; and Hon. Charles H. Cahan, Secretary of State. The

last two Ministers are Montreal men. It is this sub-committee that had interviews with Sir Henry Thornton and other C. N. R. officers. Premier Bennett is in Western Canada for a few days but it is expected that on his return about August 30 a decision will be reached.

Meanwhile the labor organizations in Montreal and a number of business men are clamoring for the commencement of the construction work, the former urging that it will form a real solution of the present unemployment problem and the latter contending that as it is in the interests of business in Montreal generally the project should commence without delay.

Let the "few mean politicians who are trying to kill the project," keep their hands off the present Canadian National Railways' terminal plan, members of the Montreal Trades and Labor Council declared last week, when they unanimously favored the immediate forwarding of a night letter to the Employment Service Council of Canada at Ottawa asking that the present C. N. R. plans be carried out, despite the opposition of the Montreal City Council, in order to relieve the metropolis' widespread unemployment.

The city officials, particularly Mayor Camillien Houde and Alderman Allan Bray, chairman of the Executive Committee, came in for strong criticism by members of the Labor Council, and their opposition to the carrying out of the terminals plans was condemned as "stupid politics."

### Full-Crew Law Activity in Ohio and North Dakota

An order issued by the Ohio Public Utilities Commission holding that the state full-crew law does not apply to gas-propelled motor trains was appealed to the Ohio Supreme Court by the Brotherhood of Locomotive Firemen and Engineers and the Brotherhood of Railroad Trainmen on August 21. The brotherhoods had complained to the Commission that the Wheeling & Lake Erie was operating a regularly scheduled passenger train between Toledo and Zanesville with a gas-propelled motor car in violation of the full-crew law. The Commission first held that the railroad must operate the trains with a full crew, but on rehearing reversed its ruling.

The North Dakota full-crew law does not apply to the operation of a gas-propelled vehicle on rails when it is used by itself and not as part of a train, according to an opinion of James Morris, attorney general of the state, which was announced at Bismarck on August 21, in response to an inquiry from the state legislative chairman of the Order of Railway Conductors, A. H. Barrett. The state law, the attorney general said, prescribes a minimum crew for freight and mixed trains of more than 40 cars, and for similar trains of fewer than 40 cars, as well as for light engines. Another section provides for minimum crews on passenger trains of more than four cars.

"Since the bus in question carries only passengers," opinion continued, "it cannot be termed either a freight train or a

mixed train. Since it consists of but one unit, it can, by no stretch of the imagination, be classed as a passenger train of more than four cars. The only remaining classification to be considered is whether or not the bus described can be considered a 'light engine.'

"An exhaustive study of the statutes and court decisions fails to disclose any legal definition for the term 'light engine.' In the absence of a legal definition, we must presume that the Legislature used the term in the sense that it was used by railroad men at the time the law was passed. A 'light engine' was then and is now considered to be a locomotive or other train power unit operated without a train attached. The bus about which you inquire is neither powered nor equipped to handle other cars. It is in no sense the power unit of a train that can be run separately from the train itself and it can not be termed a 'light engine.'"

### Municipal Opposition to C. N. R.'s Montreal Project

Col. W. C. Lancaster of New York, who was employed as a consultant by the city executive of Montreal to report on the Canadian National's proposed terminal improvements in that city (see *Railway Age* of March 22, page 681) has rendered an adverse report on the plan. As a substitute an entirely different plan for improvements is proposed which follows that of the railroad only to the slightest degree. A summary of the Lancaster report, made public by Charles E. Fraser, a Montreal engineer who collaborated in its preparation, follows in part:

"The proposed tunnel site of the C.N.R. terminal is not condemned; but tracks passing over city streets southward from the terminal to Victoria bridge are condemned. Those tracks should be depressed to pass under city streets, it is argued; additional cost for that project would be around \$14,000,000, but that would be offset by sale of air rights over the depressed tracks.

"Bonaventure (the present passenger terminal) is preferred as the site for the terminal, with six depressed tracks running from Bonaventure to Turcot yard, and from Bonaventure through St. Henri to the Lachine canal crossing en route to Victoria bridge. Depression of tracks is recommended whether the Bonaventure site is used for the main terminal, or whether it is employed merely for freight purposes, as under the existing C.N.R. scheme. Real estate and air rights over depressed tracks, which could be sold for factory and warehouse purposes, would mean a saving for the railroad, it is claimed. The Bonaventure site project, even with depressed tracks, would cost slightly less than the Tunnel site scheme, the experts find; and nearly all of the cost would be recovered by sale of air rights and release of property rights around the tunnel.

"The Lancaster plan does not interfere with C.N.R. proposals for routing west-bound trains through Mount Royal tunnel and via the Lakeshore. Elevation of tracks

between Point St. Charles and Victoria bridge is not interfered with.

"Construction in the future of a two-track subway link between east and west end lines of the C.N.R. is recommended; that link would run from Bonaventure to a new passenger terminal in the east end, which would replace Moreau street station, below Notre Dame street, fringing the harbor, thus eliminating more than 50 level crossings in Maisonneuve and beyond and eliminating also the belt line between Longue Pointe and St. Laurent proposed in the existing C.N.R. plan."

Coincident with the publication of the Lancaster report the management of the Canadian National made public a statement which says that the original plan as approved and provided for by Parliament two years ago is the preferable plan. A letter from Sir Henry Thornton, president of the C.N.R., to Mayor Houde of Montreal is cited, reading in part follows:

"Following upon the civic election the Executive Committee requested the Canadian National Railways to suspend activity in connection with the construction of the new passenger and freight terminals at Montreal until such time as the committee had an opportunity of considering the project further. At a later date you informed us that you intended to engage Mr. W. C. Lancaster, consulting engineer of New York City, to make a report for you. Although there had been already very considerable delay, we thought it would be proper to accede to this request for the suspension of operations, at the same time making it clear to you that we would not consider ourselves obligated by anything that might arise therefrom.

"On Friday last you gave to Mr. S. J. Hungerford, our vice-president in charge of operation and construction, a copy of the report made to you by Mr. Lancaster and that report has been under close examination by our technical and other officers since that time. I now find it necessary to inform you that the plan prepared by Mr. Lancaster for terminals for the Canadian National Railways at Montreal is unsatisfactory to us. Its adoption, while calling for the expenditure of a very large sum of money, would not provide the National System with the major advantages which it requires for the handling of the traffic of the city and providing for the growth of industry on the island. From whatever standpoint it is considered, whether it be the efficient and expeditious operation of our passenger trains through the city, the handling of the ever-increasing freight traffic of Montreal, or the provision of facilities for the establishing of new industries, Mr. Lancaster's scheme falls far short of providing the Canadian National Railways with the character of terminals which it needs on the Island of Montreal."

Sir Henry enumerates the following objections: The Bonaventure location is inferior from a traffic standpoint; a passenger terminal at Bonaventure would necessitate a freight terminal at another, and inferior, location; the advantages of a pull-through station would be sacrificed;



the route from Bonaventure to Victoria bridge would be two miles longer than the proposed line; a tunnel (instead of an overhead structure) from Bonaventure to the new terminal would necessitate an impracticable 1.5 per cent grade; the failure to construct the proposed new line from Longue Vue to Mt. Royal would deprive that territory of a needed facility and prevent the C.N.R. from establishing a much-needed connection between its yards in the eastern and western parts of the city.

The Canadian National plan has received the sanction of the Canadian government and of various Montreal commercial bodies and was fully approved by the previous municipal government of Montreal (Mayor Houde being but recently elected).

Premier Bennett of Canada, a short time ago, named a sub-committee of the Cabinet to hear the representations of both parties to the conflict and seek some amicable settlement. That sub-committee consists of Hon. Robert J. Manion, Minister of Railways and Canals; Hon. Alfred Duranleau, Minister of Marine, and Hon. C. H. Cahan, Secretary of State. Already they have had two conferences with Sir Henry Thornton, president of the Canadian National Railways, and his chief officers. The railway has, it is understood, spoken plainly to the Cabinet, declaring it could be satisfied with nothing less than its own plans, already approved by Parliament.

#### Division VI, A.R.A., Appoints Committees

The Purchases and Stores division of the American Railway Association has announced the completion of the formation of committees for the year's work. Reports will be received from 26 committees, which will undertake the study of five new subjects: Most Economical Method of Purchasing and Distributing Materials; Pricing Materials; Commodity Purchases; Non-Ferrous Metals; Systematic Checking of the Weight and Count of Material Received at Destination and Organization and Methods for Adoption of Standards.

The joint committee of the Purchases and Stores and the Mechanical divisions on reclamation has been continued and new chairmen have been appointed on most of the standing committees. The committees, and committee personnel, are as follows:

General Committee: C. E. Walsh (chairman), purchasing agent, Penna.; L. C. Thomson (vice-chairman), manager of stores, C. N.; F. S. Austin, purchasing agent, B. & A.; J. L. Bennett, purchasing agent, C. of Ga.; G. W. Bichlmeir, general purchasing agent, U. P.; E. A. Clifford, general purchasing agent, C. & N. W.; W. Davidson, general storekeeper, I. C.; E. F. Hasbrook, assistant purchasing agent, C. B. & Q.; J. U. King, general storekeeper, A. C. L.; L. P. Krampf, supply agent, M. P.; C. C. Kyle, purchasing agent, N. P.; J. E. Mahaney, general supervisor of stores, C. & O.; G. E. Scott, purchasing agent, M-K-T.; A. L. Sorensen, manager of stores, Erie; H. C.

Stevens, general storekeeper, Wab.; C. B. Tobey, general storekeeper, L. V., and W. J. Farrell, secretary, Purchases and Stores division, American Railway Association.

Store Department Book of Rules: H. R. Toohey (chairman), inspector of stores, C. M. St. P. & P.; J. H. Ellis, storekeeper, C. B. & Q., and J. H. Geary, superintendent of stores, Erie.

Classification of Material: L. B. Wood (chairman), general storekeeper, S. P.; E. A. Carlson, division storekeeper, P. M.; E. A. Ernst, district storekeeper, C. R. I. & P.; W. R. Knauer, supervisor stores catalogue, Penna.; F. J. McMahon, general storekeeper, N. Y. C.; H. M. Smith, assistant general storekeeper, N. P., and W. Davidson (chairman ex-off.), general storekeeper, I. C.

Recovery, Repairs and Reclamation of Discarded Materials—Classification, Handling and sale of Scrap: T. J. Hegeman (chairman), superintendent of reclamation, C. B. & Q.; I. C. Bon, superintendent of reclamation, Wab.; J. J. Collins, superintendent of reclamation, Erie; T. S. Edgell, division storekeeper, M. & O.; W. B. Gordon, assistant general storekeeper, C. N.; J. C. Kirk, assistant general storekeeper, C. R. I. & P.; G. W. Lieber, superintendent of reclamation, M-K-T.; A. L. Prentice, supervisor of scrap and reclamation, N. Y. C.; H. M. Rainie, assistant purchasing agent, B. & M.; B. W. Roberts, general purchasing agent, C. P.; W. P. Stewart, supervisor of scrap, I. C.; E. A. Workman, manager purchases and stores, C. R. R. Co. of N. J., and C. B. Tobey (chairman ex-off.), general storekeeper, L. V.

Comparisons of Material Stock Reports and Store Expenses: D. V. Fraser (chairman), assistant purchasing agent, M-K-T.; O. L. Browne, assistant to purchasing agent, A. C. L.; W. E. Brady, assistant stores accountant, A. T. & S. F.; O. A. Donagan, general storekeeper, B. & M.; V. N. Dawson, assistant general storekeeper, B. & O.; E. Harty, assistant general storekeeper, S. P.; E. H. Hughes, general storekeeper, K. C. S.; C. H. Murrin, special accountant, I. C.; J. K. McCann, general piece work inspector, C. B. & Q.; J. F. Riddle, statistician, Penna.; L. Sutherland, general storekeeper, P. & L. E.; J. T. Schenkel, division accountant, W. & L. E., and A. L. Sorensen (chairman ex-off.), manager of stores, Erie.

Forest Products: F. V. Weisenburger (chairman), timber agent, N. P.; James Deery, assistant purchasing agent, Penna.; D. R. Elmore, assistant to general manager, Fruit Growers' Express; H. W. Herbert, lumber buyer, I. C.; F. S. Hillier, tie and timber agent, N. Y. C. & St. L.; J. C. Harkness, tie and timber agent, St. L.-S. W.; J. R. McGrenara, general tie and lumber inspector, A. T. & S. F.; J. E. McNeley, chief tie and lumber supervisor, A. C. L.; C. C. Warne, 1st assistant purchasing agent, N. Y. C., and C. C. Kyle (chairman ex-off.), purchasing agent, N. P.

Purchasing and Storekeeping for Motor Bus Operation: J. L. Sullivan (chairman), general traveling storekeeper, U. P.; G. W. Alexander, general store-

keeper, C. of Ga.; W. M. Hinkey, district storekeeper, B. & O.; J. T. Kelly, general storekeeper, C. M. St. P. & P.; Frank McGrath, traveling storekeeper, B. & M.; C. L. McIlvaine, assistant purchasing agent, Penna.; H. C. Ralls, district storekeeper, M. P., and H. C. Stevens (chairman ex-off.), general storekeeper, Wab.

Workable Rules in Connection with the Carrying Out of the Provisions of Section 10 of the Clayton Anti-Trust Act: E. A. Clifford (chairman), general purchasing agent, C. & N. W.; W. C. Bower, vice-president, N. Y. C., and H. C. Pearce, director of purchases and stores, C. & O.

Control of Shop Manufacturing Orders for Stock Materials: J. P. Kavanagh (chairman), general storekeeper, C. & O.; J. C. Baker, traveling storekeeper, Southern; E. B. DeVilbiss, assistant stores manager, Penna.; F. E. Huff, supervisor of materials, N. & W.; G. J. Hunter, traveling material supervisor, A. T. & S. F.; J. Maier, storekeeper, C. B. & Q.; C. A. Marshall, division storekeeper, C. R. R. Co. of N. J.; A. Schipper, general inspector of stores, S. P., and E. A. Clifford (chairman ex-off.), general purchasing agent, C. & N. W.

Fuel: E. J. Lamneck (chairman), fuel purchasing agent, Penna.; J. J. Bennett, purchasing agent, I. C.; J. M. Johnston, fuel agent, M-K-T., and P. Hunter, assistant purchasing agent, C. B. & Q.

Most Economical Methods of Purchasing and Distributing Materials: A. E. Owen (chairman), assistant purchasing agent, Penna.; R. R. Jackson, division storekeeper, Wab.; L. L. King, assistant purchasing agent, I. C.; C. D. Longsdorf, assistant general storekeeper, N. Y. C.; W. H. Morris, general storekeeper, Reading; C. H. McGill, supply train storekeeper, N. Y. N. H. & H.; E. H. Polk, district storekeeper, Southern; A. S. Thompson, purchasing agent and storekeeper, C. & G., and F. S. Austin (chairman ex-off.), purchasing agent, B. & A.

Pricing Methods: W. S. Morehead (chairman), assistant general storekeeper, I. C.; W. A. Clem, assistant purchasing agent, Reading; B. W. Griffith, general storekeeper, N. Y. C.; U. K. Hall, general supervisor of stores, U. P.; J. W. Hagerty, general supervisor of purchasing department, Penna.; E. D. Toye, general storekeeper, C. N., and E. F. Hasbrook (chairman ex-off.), assistant purchasing agent, C. B. & Q.

Purchasing Agents Organization and Office Records: C. D. Baldwin (chairman), purchasing agent, B. & A.; C. Miles Burpee, purchasing engineer, D. & H.; J. E. Candelas, assistant to general purchasing agent, Ferrocarriles Nacionales de Mexico; H. M. Dewart, purchasing agent, C. V.; A. V. B. Gilbert, purchasing agent, A. B. & C.; W. W. Griswold, purchasing agent, W. & L. E.; T. M. McKeown, assistant general purchasing agent, C. P.; R. L. Tindal, purchasing agent, N. Y. C. & St. L., and G. W. Bichlmeir (chairman ex-off.), general purchasing agent, U. P.

Stationery and Printing: F. Blanchard, Jr. (chairman), stationery storekeeper, B. & O.; C. C. Anderson, stationer, N. P.; W. W. Griswold, stationer, C. R. I. & P.; J. T. Van Horn, stationer, M. P.; D. E.

Viger, stationery storekeeper, B. & A.; W. R. F. Whaley, stationery storekeeper, Penna.; H. O. Wilson, stationery agent, C. P., and L. C. Thomson (chairman ex-off.), manager of stores, C. N.

Fire Prevention: A. J. Cossett (chairman), storekeeper, C. & N. W.; J. L. Berryhill, general storekeeper, W. P.; C. H. Rothgery, storekeeper, B. & O., and H. J. Zimmerman, storekeeper, Penna.

Handling of Materials: R. D. Crawford (chairman), general storekeeper, M. P.; B. T. Adams, assistant general storekeeper, I. C.; E. J. Becker, traveling storekeeper, S. P.; J. B. Fowler, storekeeper, Penna.; A. M. Gage, general storekeeper, M. C.; N. C. Galleher, assistant general storekeeper, M-K-T.; G. W. Leary, supervisor of stores delivery, C. & O.; R. W. Lougee, storehouse foreman, general stores, Erie; J. V. Miller, assistant general storekeeper, C. M. St. P. & P.; O. A. Schultz, inspector of stores, C. B. & Q.; E. W. Walther, general storekeeper, B. & O.; J. W. Watkins, division storekeeper, L. V., and J. E. Mahaney (chairman ex-off.), general supervisor of stores, C. & O.

Standardization and Simplification of Stores Stocks: L. F. Duvall (chairman), general storekeeper, A. C. L.; H. G. Devine, assistant purchasing agent, St. L-S. W.; W. Dixon, supervisor of material standardization, M. P.; A. G. Follette, assistant chief material supervisor, Penna.; J. S. Gabriel, division storekeeper, D. & R. G. W.; W. L. Hunker, district storekeeper, C. R. I. & P.; G. W. Leigh, purchasing agent, M. St. P. & S. S. M.; W. E. Steen, district storekeeper, B. & O.; A. D. Stewart, storekeeper, N. & W.; W. W. Williams, chief of requisition bureau, N. Y. C., and J. U. King (chairman ex-off.), general storekeeper, A. C. L.

Stores Department Safety Practices: E. H. Lyons (chairman), division storekeeper, C. M. St. P. & P.; J. S. Genther, general storekeeper, L. & N. E.; J. H. Smith, division storekeeper, Southern; E. L. Walker, purchasing agent, A. C. & Y., and H. Weindel, inspector of stores, U. P.

Terminal Railway Storekeeping: C. W. Yeamans (chairman), purchasing agent, C. & W. I.; J. C. Dods, general storekeeper, K. C. T.; S. A. Hayden, chief clerk to general storekeeper, M-K-T.; A. F. Kreglow, storekeeper, W. T.; H. A. Lockhart, storekeeper, B. & O.; J. T. O'Dea, assistant to president and purchasing agent, P. & P. U.; C. B. Sauls, division storekeeper, I. C., and L. P. Krampf (chairman ex-off.), supply agent, M. P.

Capacity Loading and Prompt Handling of Company Material Cars: T. H. Ryan (chairman), assistant purchasing agent, Wab.; J. H. Beggs, purchasing agent C. & E. I.; J. W. Cockrill, division storekeeper, I. C.; W. W. Davis, purchasing agent and storekeeper, P. & S. F.; J. A. King, division storekeeper, C. & N. W.; J. C. MacDonald, district storekeeper, C. M. St. P. & P.; W. R. H. Mau, assistant general purchasing agent, M. P.; D. H. Reed, traveling storekeeper, Southern; J. S. Sewall, division storekeeper, N. P.; C. H. Thompson, district storekeeper, S. P.; H. E. Warren, manager of purchases

and stores, G. M. & N.; Grover Wonnell, storekeeper, Penna., and J. E. Mahaney (chairman ex-off.), general supervisor of stores, C. & O.

Joint Committee on Metric System: J. W. Gerber (chairman), general storekeeper, Southern; J. F. Marshall, purchasing agent, C. & A., and E. J. Myers, general storekeeper, N. P.

Purchasing, Storage and Distribution of Equipment and Supplies Used in Dining Cars, Hotels and Commissaries: H. N. Mellor (chairman), commissary buyer, Penna.; W. J. Burns, assistant purchasing agent, C. P.; H. A. Hansen, superintendent of dining car and hotel department, U. P.; L. V. Hyatt, commissary purchasing officer, M. P.; L. M. Jones, superintendent of sleeping and dining cars, C. M. St. P. & P.; W. F. Jones, purchasing agent, dining service, N. Y. C.; T. K. Russell, assistant superintendent dining service, I. C., and J. L. Bennett (chairman ex-off.), purchasing agent, C. of Ga.

Training of Employees in Purchasing and Stores Departments: E. G. Roberts (chairman), division storekeeper, C. R. I. & P.; A. Aiken, office manager of purchasing department, Penna.; U. S. Cornelius, traveling storekeeper, Southern; G. A. Goerner, traveling storekeeper, C. B. & Q.; C. B. Hanover, chief clerk to purchasing agent, C. M. St. P. & P.; J. L. Irish, general storekeeper, O-W. R. R. & Nav. Co.; W. J. Sidey, storekeeper, B. R. & P., and L. C. Thomson (chairman ex-off.), manager of stores, C. N.

Commodity Purchases: A. W. Munster (chairman), purchasing agent, B. & M.; B. A. Aikens, purchasing agent, M. C.; F. E. Driscoll, purchasing agent, Erie; John Foley, assistant purchasing agent, Penna.; H. P. McQuilkin, assistant purchasing agent, B. & O.; E. G. Walker, assistant general purchasing agent, A. T. & S. F., and F. S. Austin (chairman ex-off.), purchasing agent, B. & A.

Non-Ferrous Metals: P. L. Grammer (chairman), assistant purchasing agent, Penna.; C. C. Hubbell, purchasing agent, D. L. & W.; J. H. Nichols, general storekeeper, N. Y. C. & St. L.; E. T. Monroe, general purchasing agent, B. R. & P., and G. E. Scott (chairman ex-off.), purchasing agent, M-K-T.

Systematic Checking of Weights and Count of Materials Received at Destination: O. Nelson (chairman), general storekeeper, U. P.; J. H. Brown, general storekeeper, C. N.; T. A. Hodges, general storekeeper, S. A. L.; A. B. Lackey, division storekeeper, Southern; E. W. Peterson, general storekeeper, B. & A.; J. G. Stuart, general storekeeper, C. B. & Q.; James Young, assistant purchasing agent, Penna., and A. L. Sorensen (chairman ex-off.), manager of stores, Erie.

Organization and Methods for Adoption of Standards: A. S. McKelligon (chairman), general storekeeper, Southern; H. E. Ray, general storekeeper, A. T. & S. F.; L. H. Skinner, general purchasing agent, Southern; C. E. Smith, vice-president, N. Y. N. H. & H.; C. D. Young, general purchasing agent, Penna., and G. E. Scott (chairman ex-off.), purchasing agent, M-K-T.

## Traffic

The Chicago, Rock Island & Pacific has installed four of the latest type parlor cars on its passenger trains between Chicago and Peoria. These cars are decorated in grey-green, have a capacity for seating 22 persons in the main room.

The railroads in Official Classification territory have joined the western roads in petitioning the Interstate Commerce Commission for a postponement from October 1 to January 1 of the effective date of the commission's order prescribing a general revision of western grain rates, including rates to the ports.

The Interstate Commerce Commission has suspended from August 27, until March 27, 1931, the operation of tariff schedules published by the Union Pacific which propose changes in rules governing the unloading, reloading, feeding and watering of live stock between points in western states and the primary markets, which would result principally in increases.

The Interstate Commerce Commission has granted the application filed by E. B. Boyd, as agent for the Western Trunk Line railways, for authority to allow an extension of time for ten months on expense bills covering grain in storage in transit at Minneapolis, St. Paul and Minnesota Transfer, Minn., for the purpose of allowing additional time for the Grain Stabilization Corporation to find an outlet for approximately 2,000,000 bushels of grain which it has kept in storage at those points for two or three years.

The agricultural department of the St. Louis-San Francisco has offered several suggestions to the farmers in the southwest in order to enable them to salvage something from the drought. The department recommends that where rain has fallen sufficiently to put the ground in condition, the farmer sow Sudan grass for hay, as this will mature before the frost and will increase the protein content of the soil materially. It also suggests sowing large acreages to wheat and rye for fall and early spring pasture, as this will shorten the period for feeding roughage and will also provide a winter cover crop.

Plans for expediting certain of the work projected in the way of improving rivers for navigation and flood control, in order to relieve the unemployment situation to some extent, were considered by President Hoover, the Secretary of War and officers of the Army Engineer Corps at a conference at the President's summer camp on the Rapidan river on August 23. The President took this occasion to review the progress being made and the plans for future work on inland waterway projects which have been authorized by receiving first-hand reports from the chief of engineers and the officers in charge of work on the Mississippi, Missouri and Illinois rivers. The matter of the proposed St. Lawrence waterway



was also discussed with Hanford McNider, newly appointed minister to Canada. The Secretary of War is planning an early trip down the Mississippi.

### Western Roads Reduce Rates For Drought

The western railroads put into effect on August 25 reduced rates on hay and feed into and livestock out of drought-affected districts in their territory, when the shipments are made on permits issued with the approval of the Department of Agriculture, following the example set by the eastern and southern roads. Instead of reducing the rates 50 per cent, however, as the other roads did, the western roads made the reduction  $33\frac{1}{3}$  per cent and the reduction on livestock is limited to the local rates, without transit, and on shipments from Wyoming and Montana to hauls not exceeding 500 miles. The rates do not apply to shipments to markets or to public feeding grounds.

A joint tariff on behalf of all the western roads was filed with the Interstate Commerce Commission by E. B. Boyd, J. E. Johanson and H. G. Toll as agents. The Car Service Division of the American Railway Association amended its embargo circular, which embargoes shipments under the emergency rates unless covered by permits to include the western lines.

Secretary Hyde of the Department of Agriculture announced on August 26 that reports submitted by the railways showed that up to the night of August 25 they had moved feed at reduced rates into drought areas to the extent of 675 carloads, of which 28 per cent went to West Virginia, 25 per cent to Virginia, 23 per cent to Maryland, 16 per cent to Ohio, and 8 per cent to other states.

## Foreign

### Promotion for G. W. R.'s Former American Agent

K. W. C. Grand, assistant publicity agent of the Great Western Railway (England) has been appointed commercial advertising agent to the superintendent of the line at Paddington (London) as from July 28 last. Mr. Grand was educated at Rugby and joined the company's service in 1919 at Park Royal Goods Station. After gaining experience there, at Ealing Broadway, and in the divisional superintendent's office at Paddington, he was transferred to the general manager's office in 1922. In March, 1926, he was appointed the company's general agent in the United States and Canada, with headquarters at New York. He returned to England in 1929 and was appointed assistant publicity agent on May 1 which position he held until his recent appointment.

### Cuban Railways in 1928-1929

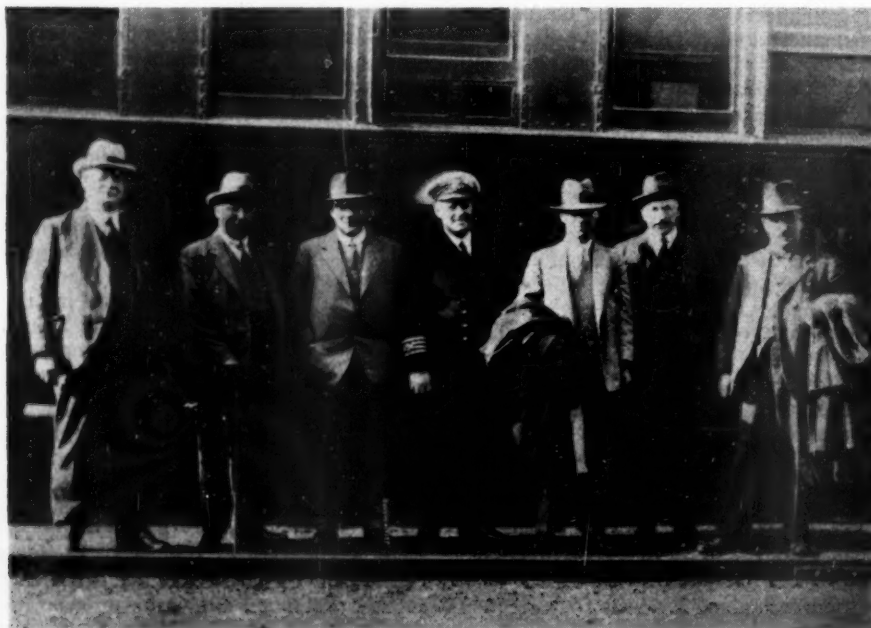
An unusually heavy sugar movement, coupled with drastic cuts in operating expenses, enabled 20 Cuban railway companies, representing 94.5 per cent of the mileage of all public service roads on the island, to make a relatively favorable showing for the fiscal year ending June 30, 1929, according to a consolidated report compiled by the Department of Commerce.

Despite the business depression which was general in Cuba in 1928-1929, gross

revenues for the 20 roads totaled \$42,895,768, an increase of \$501,862 over 1927-1928 revenues of \$42,393,906; while operating expenses were \$31,077,504, or \$1,012,443 less than in 1927-1928, when they amounted to \$32,089,946. From the net railway operating income of \$11,818,264 (as compared with \$10,303,960 in 1927-1928), the companies were able to pay interest at 5 per cent on their funded debt and average dividends of 3.16 per cent on capital stock. A total of 11,459,968 passengers and 29,501,410 tons of freight, including 21,165,087 tons of sugar, were carried during the year on the 4,932 kilometers (3,063 miles) of line which are included in the various reporting systems.

The 20 railways covered in the Commerce Department's report are as follows: United of Havana, Havana Terminal, Cuba Consolidated, Northern, Hershey Cuban, Hershey Terminal, Guantanamo & Western, Tunas, Caibarien & Moron, Matanzas Terminal, Guantanamo, Chaparra, Resulta, Gibara & Holguin, Perseverencia, Covadonga, Yaguajay, Toledo & San Pedro, Manuelita and Portugaleta. Of these, the United of Havana and the Cuba Consolidated are the most important, carrying, between them, approximately 79 per cent of the passengers carried by all 20 companies, handling 72 per cent of the total freight, operating 71 per cent of the mileage, receiving 74 per cent of the revenues and contributing 75 per cent of the expenses. Other outstanding roads in the group are the Northern, the Havana Terminal, the Hershey Cuban, the Guantanamo & Western, the Tunas, and the Matanzas Terminal.

The railroad situation in Cuba as a whole, however, is somewhat less favorable than the ability of the roads to make a favorable showing in a period of depression might indicate. Sugar tonnage was approximately 20 per cent greater than in 1927-1928, making a difference in revenues of approximately \$2,912,000, so that revenues from general freight traffic, exclusive of sugar, declined by nearly \$2,500,000. Expenses, too, have been cut to a point where almost no further retrenchment is possible, either in the operating or maintenance departments, according to a statement by the chairman of the United Railways of Havana. Modern road construction by the Cuban government has been proceeding at a rapid pace in all parts of the island in recent years, with the result that freight and passenger traffic of all types has been taking to the highways. As examples of this tendency, passenger travel within 100 miles of Havana now moves largely by motor coach, while almost the entire tobacco crop of the Pinar del Rio region is transported by highway rather than by rail. The railroads are further hindered in their fight against highway competition by the fact that highway transportation is free of regulation or supervision, while the efforts of the railways to have it brought under the control of the Cuban Railway Commission, or some other regulatory body, have so far proved unsuccessful.



British Railway Officers, Who Are to Study Railway Conditions in Canada and the United States

The above distinguished group of British railwaymen, officers of the London, Midland & Scottish, headed by Sir Harold Hartley, vice-president and general manager of that company, arrived in Quebec, Que., recently, on the Canadian Pacific liner "Empress of France." They are bound on a survey of railway conditions in Canada and the United States. From left to right in the picture, which was taken at Montreal, Que., are Sir Henry Fowler, chief mechanical engineer; F. A. Cortez-Leigh, electrical engineer; Sir Harold Hartley; Staff Captain Coyle of the "Empress of France"; E. J. H. Lemon, car superintendent; A. F. Bound, signal and telegraph engineer, and A. Newlands, chief engineer.

## Equipment and Supplies

### Locomotives

THE NORTHERN NATAL NAVIGATION COMPANY, Port Natal, South Africa, has ordered one 2-10-2 type locomotive from the Baldwin Locomotive Works.

THE NEW YORK, NEW HAVEN & HARTFORD has ordered six locomotive tenders from the American Locomotive Company. These tenders will have a capacity of 18 tons of coal and 16,000 gal. of water.

PICKANDS MATHER & COMPANY have ordered one six-wheel switching locomotive from the American Locomotive Company. This locomotive will have 22 by 28 in. cylinders and a total weight in working order of 182,000 lb.

THE PENNSYLVANIA has ordered the construction of 12 electric locomotives at its Altoona shops. Two of the O-1 type electric passenger locomotives have already been delivered and in addition there will be six O-1 type passenger locomotives, two P-5 type passenger locomotives and two L-6 freight locomotives. The P-5 locomotives will be larger than the O-1 type, the latter having only two pairs of drivers and the former three pairs of drivers with trailer trucks at each end; the L-6 freight will have four pairs of drivers. See *Railway Age*, August 16, page 338.

### Freight Cars

THE CARNEGIE STEEL COMPANY is inquiring for 30 gondola cars, 20 flat cars and 18 special flat cars, all of 70 tons' capacity.

THE TENNESSEE COPPER COMPANY is now inquiring for 50 tank cars, class 103-A, of 7,000 gal. capacity. This company was reported in the *Railway Age* of April 12 as inquiring for 10 to 30 tank cars.

THE ILLINOIS STEEL COMPANY has ordered 10 ingot cars from the American Car & Foundry Company. This is in addition to 95 ingot cars placed with the same builder and reported in the *Railway Age* of August 23.

### Machinery and Tools

THE ATCHISON, TOPEKA & SANTA FE has ordered one 25-ton gantry crane from the Whiting Corporation.

### Iron and Steel

THE INDIANA HARBOR BELT is inquiring for 1,800 tons of structural steel for track elevation work at Bellwood, Ill.

THE PENNSYLVANIA has ordered 200 tons of steel for a bridge at Dayton, Ohio, from the American Bridge Company.

THE BALTIMORE & OHIO has received bids on 325 tons of steel for a bridge on Staten Island. This company has also received bids on 1,600 tons of steel for various bridges.

THE DELAWARE, LACKAWANNA & WESTERN has ordered 2,500 tons of steel rail for delivery in October, from the Bethlehem Steel Company. The above includes 2,000 tons of 130-lb. rail and 500 tons of 105-lb. rail.

THE NEW YORK CENTRAL has given a contract to the American Bridge Company for 150 tons of steel to be used in widening Park avenue in New York between Eighty-Sixth and Ninety-Sixth street. Bids have also been taken on 300 tons of steel for grade separation work at Central Square, N. Y., and on 365 tons for similar work at Holley, N. Y.

### Signaling

THE MISSOURI-KANSAS-TEXAS has ordered from the Union Switch & Signal Company searchlight signals and other material for installation on 6½ miles of its line in the vicinity of Highland, Texas.

THE NAPIERVILLE JUNCTION has ordered from the General Railway Signal Company material for the installation of block signals on its line between Delson, Que., and Lacolle. Thirty-one color-light signals will be used, type SA.

THE MICHIGAN CENTRAL has ordered from the General Railway Signal Company material for automatic block signals to be installed on its line between Detroit, Mich., and St. Thomas, Ont., 113 miles, double track. Color-light signals, type SA, will be used.

THE PENNSYLVANIA has ordered from the Union Switch & Signal Company material for the installation of centralized traffic control at Perrysville, Ohio. The machine will be at Loudenville, and will control switches and signals at Perrysville, six miles away, and also at Lucas, five miles beyond Perrysville; also the automatic signals on the 11 miles of line.

### Miscellaneous

THE READING has given a contract to the Westinghouse Electric & Manufacturing Company for supervisory control and switchboard equipment for seven power substations and 14 intermediate stations which will supply current to the electrified zone of the road. There will be a total of 24 stations in the present electrification project under a single supervisory control. Power will be received from the 60-cycle lines of the Philadelphia Electric Company at the railroad company's Wayne Junction converter station and distributed at 25 cycles to the substations as required for the operation of the trains.

## Supply Trade

A. H. Schaffert, works manager of the Truscon Steel Company, Youngstown, Ohio, has been elected vice-president.

The Inland Steel Company is reclaiming 50 acres from Lake Michigan for the future expansion of its Indiana Harbor, Ind., plant.

The Pressed Steel Car Company, Chicago, is adding an additional power unit and planning additions to its steel foundries at Hegewisch, Ill.

The Chicago Bridge & Iron Company, Chicago, has opened a branch office at 422 Smith Tower, Seattle, Wash. R. L. Hilton has been placed in charge.

David W. VanAlstyne, who has been for many years associated with the American Locomotive Company in various capacities, and for the past few years assistant to vice-president of sales at New York, has resigned effective September 1.

George A. Morison, vice-president and treasurer of the Bucyrus-Erie Company, South Milwaukee, Wis., has relinquished his duties as treasurer, but remains as vice-president in charge of finance, commercial and corporation matters. John G. Miller, manager of domestic sales, has been appointed treasurer and has been succeeded by P. H. Brickhead, assistant manager of domestic sales.

I. Lamont Hughes, vice-president of the United States Steel Corporation, at New York, has been elected president of the Carnegie Steel Company, Pittsburgh, Pa., succeeding William G. Clyde, who has resigned on account of ill health. Ambrose N. Diehl, vice-president of the Carnegie Steel Company has resigned to become a vice-president of the United States Steel Corporation with headquarters at New York and Ralph H. Watson, general superintendent of the Homestead, Pa., works of the Carnegie Steel Company succeeds Mr. Diehl as vice-president and a director of the Carnegie Steel Company with headquarters at Pittsburgh. Sydney Dillon, chief mechanical engineer of the Carnegie Steel Company has been appointed assistant to the vice-president and R. A. Holcomb will continue as secretary to the president.

E. H. Weigman, master car builder of the Kansas City Southern at Pittsburgh, Kan., has resigned to become assistant to vice-president of the Grip Nut Company, Chicago, with jurisdiction over all territory west of Chicago. Mr. Weigman was born on July 29, 1892, at DeSoto, Mo. He began his railroad career in 1909 as a car repairer on the Louisville & Nashville at East St. Louis, Ill., and was employed in various capacities in the car department of the Terminal Railroad Association of St. Louis, the Missouri Pacific Lines, the Great



Northern, and the Northern Pacific. In April, 1913, he became traveling representative of the car department of the Atlantic Coast Line, with headquarters at Wilmington, N. C., and in February, 1917, assistant secretary of the Master Car Builders' and Master Mechanics' Associations (now the Mechanical Division, American Railway Association), with headquarters at Chicago. On August 1,



E. H. Weigman

1917, he was appointed supervisor of car repairs of the Louisville & Nashville at Louisville, Ky., and since October 1, 1925, served as master car builder of the Kansas City Southern at Pittsburg.

## Obituary

**James H. Edwards**, chief engineer of the American Bridge Company, died in a hospital in New York City on August 14. Mr. Edwards was born in 1864 at Oxford, N. Y. He graduated from Cornell University in civil engineering in 1888 and then served as chief engineer



James H. Edwards

of the Berlin Iron Bridge Company, East Berlin, Conn., until it was absorbed by the American Bridge Company in 1900. Mr. Edwards first served as engineer of the structural department of the American Bridge Company and from 1901 as assistant chief engineer until his appointment as chief engineer in August, 1927, which position he held at the time of his death.

## Construction

**DELAWARE & HUDSON.**—The Public Service Commission of New York has approved plans for the elimination of a number of grade crossings on this company's line in the village of Whitehall, N. Y. The project, which is estimated to cost \$851,900, will result in the removal of existing crossings at Boardman, Main, Church and Bellamy streets. At the present time the railroad runs lengthwise through Main street, crossing the other streets named at their intersection with Main, while the plan of elimination involves the rerouting of the railroad and the construction of overhead crossings at points where the new alignment is intersected by existing streets. The railroad company is to do the work and also to bear the additional cost of providing two tracks on the new line, instead of one as at present. The commission has also approved detailed plans submitted by this company for the elimination of its North Park avenue grade crossing in Cambridge, N. Y.

**LOS ANGELES & SALT LAKE.**—This company closes bids on September 5 for grading, bridging and construction of culverts for a new line which will extend from a point 2.2 miles west of Bracken, Nev., to the summit of the proposed Boulder dam on the Colorado river. The line will consist of 22.7 miles of main track and 5.2 miles of secondary track. Approximate quantities for the work for which bids have been requested are as follows: 218,000 cu. yd. of common excavation, 23,400 cu. yd. of loose rock excavation, 64,600 cu. yd. of solid rock excavation, 1,700 cu. yd. of riprap, 36 pile trestles, 6 frame trestles and 62 corrugated iron pipe culverts. The railroad will undertake the track work and construction of buildings with its own forces. The total cost of the project is estimated at \$840,000.

**SOUTHERN PACIFIC.**—A contract has been awarded to Robert E. McKee, El Paso, Tex., for the construction of a tuberculosis sanitarium at Tucson, Ariz., at an estimated cost of \$135,000.

**STOCKTON, CAL.**—The city of Stockton has applied to the Interstate Commerce Commission for authority to construct a spur track of 23,500 feet at Stockton as part of a belt line which the city expects to build ultimately around the terminal of the Stockton deep water project.

**TEMISKAMING & NORTHERN ONTARIO.**—The Temiskaming and Northern Ontario Railway Commission, in meeting at North Bay last week, awarded the contract for the last lap of the James Bay extension, from Moose River to the terminal point on the James Bay, to H. F. McLean Co., Ltd., Toronto, who are engaged in building the stretch out of Coral Rapids. The same firm has men and material on the ground for the building of the 1,500-foot bridge over the Moose River. As soon as a temporary structure is stretched over this stream, a start will be made at build-

ing the last link to carry the steel to the port. George W. Lee, chairman, Lt.-Col. L. T. Martin, Ottawa, vice-chairman and Col. J. I. McLaren, Hamilton, commissioner, left later on the monthly inspection trip over the T. & N. O. lines. They were joined by J. H. Black, vice-president of the Abitibi Paper and Power Company, and H. F. McLean, president of the Dominion Construction Company. The party then proceeded on a trip to Moose River and will return to the Abitibi Canyon where the Dominion Construction Co. will start immediately on the construction of a huge power plant. The commission will afterwards visit all centres on the T. & N. O. Lines. The annual meeting of the Nipissing Central Railway was held in conjunction with the commission meeting and the following board of officers elected for the ensuing term: President, George W. Lee; vice-president, Col. J. I. McLaren, Hamilton; Directors, Lt.-Col. L. T. Martin, S. B. Clement, and W. A. Griffin.

**TEXAS & PACIFIC.**—One of the largest construction projects proposed in recent years is included in an application filed with the Interstate Commerce Commission by the Texas & Pacific Northern for authority to build 333 miles of new line in Texas, from a point near Big Spring, Howard county, to a point near Vega, Oldham county, 232 miles, from a connection with this line in Terry county to Lubbock, 46 miles, and from a connection with the first line near Dimmitt to Amarillo, 55 miles. The application is signed by M. E. Clinton, as president, and T. D. Gresham, as general attorney. Mr. Gresham is also general attorney of the Texas & Pacific and the application states that it is proposed to effect traffic and financial relations with the T. & P.

**UNION PACIFIC.**—A contract for grading for the construction of a new classification yard at Cheyenne, Wyo., involving about 500,000 cu. yd. of earth excavation and borrow, and for the construction of the substructure of a 12-track bridge over Crow creek at the same point has been awarded to the Utah Construction Company, Ogden, Utah. The yard proper and the substructure of the bridge will involve an expenditure of about \$1,860,000.

**WABASH.**—A contract has been awarded to Jerome A. Moss, Inc., Chicago, for the construction of an addition to the roundhouse at Decatur, Ill., and a wash and locker building at the same point, involving a total expenditure of \$100,000.

**WARREN CENTRAL.**—This company has applied to the Interstate Commerce Commission for authority to construct a line from a point near Hockley, Tex., to Katy, 15 miles, to serve a salt mine and gypsum deposits.

### B. & M. Begins Improvement of North Station Approaches

Improvement of the approaches to the new North station at Boston, Mass.,—a \$4,000,000 project which will rank in importance with the building of the passenger terminal itself—was begun by the Boston & Maine on Tuesday, August 26. With installation of a \$1,000,000 battery of four new bascule bridges in place of

the present three timber draws, and a new \$600,000 signaling system, this latest feature of the Boston & Maine's modernization program will widen the "bottle neck" which for years has hampered operation of trains in and out of the North station; will move the Charles river 350 ft. northward into a new 65-ft. channel; will provide longer platforms so that passengers leaving rear cars will step off on dry land instead of on open trestles; will result in all North station platforms being raised seven in. above rail for ease in getting on and off trains; will aid vessels using the Charles river by providing a straightened and wider channel, and will modernize passenger yard facilities.

Just outside the station, workmen have begun sinking 8,000,000 pounds of concrete, which, with 4,500,000 pounds of fabricated steel and 5,000,000 additional pounds of concrete as counterweights, will form the four bascule drawbridges, carrying eight tracks. The new bridges will be of the single lift type, each carrying a counterweight of concrete weighing 1,250,000 pounds. Their operation, much speedier than at present, will be electrically controlled from a new tower. Twenty-one steel and concrete caissons, ranging in size from 6 ft., 6 in., to 15 ft., 3 in., in diameter, will be sunk 50 to 70 ft. below the track level and 15 to 35 ft. below the bed of the Charles river. These caissons, resting on bed rock and filled with concrete, will form the piers on which the four steel bridges will rest. This part of the work alone will involve a cost of \$625,000. The raising of the platforms in the station seven inches above rail level, providing an easier step to and from trains, and extension of the platforms and awnings, will cost \$600,000.

The work will be completed by stages between this fall and next summer. Completion of the project will make the new North station in every detail a modern passenger terminal, and for the future will provide bridges and approaches capable of taking care of the heaviest locomotives anticipated. Construction of the supports for the new bridges will be completed about January 1, 1931, when the steel frame work will begin to rise. From then until early summer, the steelwork will be placed, and the platform and passenger yard changes will follow in order.

Completion of the new bridges will mark improvement of an operating situation involving a handicap with which Boston & Maine officials have had to contend for years, with 348 trains in and out of the North station daily, and a train or locomotive moving over the bridges every 30 seconds in some of the rush hour periods.

The new project is the passenger terminal climax to the Boston & Maine's construction program that has already provided the new North station and the Boston Garden, and the North station building and the Manger hotel, which flank the station on either side. The filling operations which have created 66 acres of new land where the Charles and Millers rivers formerly flowed made provision for this project, and for subsequent extension of freight terminal facilities on the East Cambridge shore.

## Financial

**BOSTON & MAINE.—Operation of Vermont Valley and Sullivan County.**—The Interstate Commerce Commission has approved an extension of the agreements under which the Boston & Maine operates the Vermont Valley and the Sullivan County until July 1, 1940.

**BURLINGTON-ROCK ISLAND.—Trackage Contract.**—This company has applied to the Interstate Commerce Commission for authority to operate under a trackage contract between it and the Texas & New Orleans and the Southern Pacific Terminal Company between Houston and Galveston, Tex., 51 miles.

**CHESAPEAKE & OHIO.—Control of Big Sandy & Kentucky River.**—The Interstate Commerce Commission has authorized this company to control the Big Sandy & Kentucky River by lease and stock ownership.

**CHICAGO & NORTH WESTERN.—Bonds.**—The Interstate Commerce Commission has authorized this company to procure authentication and delivery of \$1,250,000 of general mortgage 4½ per cent bonds of 1987.

**CIMMARON & NORTHWESTERN.—Abandonment.**—The Interstate Commerce Commission has authorized this company to abandon its line of railroad extending from Cimmaron, N. M., to South Ponil, 7.5 miles.

**MISSOURI PACIFIC.—Unification Case.**—The Kansas City Southern has asked the Interstate Commerce Commission for a reconsideration and reargument or a rehearing in connection with the case in which the commission conditionally approved the lease by the Missouri Pacific of 22 subsidiary and affiliated properties. The reconsideration is asked as to certain issues with reference to the maintenance of existing routes and the Kansas City Southern wishes the commission to impose additional conditions.

**PARIS & MT. PLEASANT.—Sale.**—This road, which operates from Paris, Tex., to Mt. Pleasant, 51 mi., and which has been in receivership since 1920, has been purchased by Percy Jones, of Abilene, Tex.

**PITTSBURGH & WEST VIRGINIA.—Proposed Acquisition of W. & L. E.**—Briefs have been filed with the Interstate Commerce Commission by this company, the Wheeling & Lake Erie and the New York, Chicago & St. Louis in connection with the P. & W. V. application for authority to acquire control of the W. & L. E. The Wheeling, in its brief, asks the commission to dismiss the application, on the ground that an "inter-system affiliation" exists between the P. & W. V. and the Pennsylvania, and says that public interest will be better served by allocation of the W. & L. E. to the proposed Chesapeake & Ohio system. The Nickel Plate brief takes a similar position. The P. &

W. V. in its brief refers to its application as a step toward the formation of a fifth eastern trunk line system, and says that the interests controlling the P. & W. V., the Wabash and the Lehigh Valley have indicated a willingness to sell their holdings and thus make possible the formation of the new system, and that it has been negotiating with the Baltimore & Ohio for the Western Maryland. The Wabash and Lehigh Valley are controlled by the Pennsylvania Company, and the majority stock of the P. & W. V. is held by the Pennroad Corporation.

**ST. LOUIS SOUTHWESTERN.—Holden Authorized to Serve as Director.**—The Interstate Commerce Commission has authorized Hale Holden, chairman of the executive committee of the Southern Pacific, to serve also as director of this company, control of which the Southern Pacific is seeking to acquire.

**TERMINAL R. R. ASSN. OF ST. LOUIS.—Bonds.**—The Interstate Commerce Commission has authorized this company to issue \$3,500,000 of general mortgage refunding 4 per cent sinking fund bonds maturing in 1953 to be sold to J. P. Morgan & Co. at 89, making the average cost to the railroad approximately 4.81 per cent.

**WESTERN PACIFIC.—Bonds.**—The Interstate Commerce Commission has authorized this company to issue \$5,000,000 of first mortgage bonds, to be sold to the highest bidder at not less than 97½, the proceeds to be used to reimburse the treasury for capital expenditures. The Sacramento Northern was also authorized to issue a promissory note for \$1,589,120, to be delivered to the Western Pacific in payment of advances.

### Average Prices of Stocks and of Bonds

	Aug. 26	Last week	Last year
Average price of 20 representative railway stocks.	113.02	113.11	159.99
Average price of 20 representative railway bonds.	95.52	94.91	89.73

### Dividends Declared

Alabama & Vicksburg.—3 per cent, payable October 1 to holders of record September 8.  
Bangor & Aroostook.—Common, \$.88, quarterly; Preferred, 1½ per cent, quarterly, both payable October 1 to holders of record August 30.  
Chestnut Hill.—\$.75, quarterly, payable September 4 to holders of record August 21 to September 3.  
Consolidated Railroads of Cuba.—Preferred, 1½ per cent, quarterly, payable October 1 to holders of record September 10.  
Cuba Railroad.—Common, \$1.20, quarterly, payable September 29 to holders of record September 29.  
Delaware & Bound Brook.—2 per cent, quarterly, payable August 20 to holders of record August 19.  
Southern Pacific.—1½ per cent, quarterly, payable October 1 to holders of record August 25.  
Vicksburg, Shreveport & Pacific.—Common, 2½ per cent; Preferred, 2½ per cent; both payable October 1 to holders of record September 8.

THE CHICAGO, BURLINGTON & QUINCY on August 19 replaced the last of its wooden coaches in Chicago suburban service with steel cars. The program of replacing wooden cars with steel cars was started several years ago, and at the present time only a few wooden coaches are still used on the system.



## Railway Officers

### Executive

**Albert E. Cleft**, president of the Central of Georgia, with headquarters at Savannah, Ga., has also been elected president of the Wrightsville & Tennille, the Wadley Southern, the Louisville & Wadley, the Sylvania Central and the Short Lines Motor Transport.

**Herbert Fitzpatrick**, vice-president and general counsel of the Chesapeake & Ohio, with headquarters at Cleveland, Ohio, in addition to his recent appointment as vice-president—law and corporate relations—of the Missouri Pacific has been elected to a similar position on the Texas & Pacific.

**Charles M. Rathburn**, since 1890 president of the Atchison Union Depot & Railroad Company at Atchison, Kan., and for 21 years prior to that time engaged in railway service in the Central West, will retire from active duty on September 1 at the age of 84 years. Mr. Rathburn was born at Lower Horton, N. S., and, after serving for four years during the Civil war with the Twelfth Massachusetts Volunteers, entered railway service as a timekeeper in the car shops of the Chicago, Burlington & Quincy at Aurora, Ill. Later he was a clerk in the car and stores departments, a car repair man and a car builder and chief clerk in the track department of the Eastern division of the Burlington and chief clerk in the transportation department of the Atchison, Topeka & Santa Fe. From 1881 to 1888 he was successively assistant superintendent and superintendent of the Eastern and Western divisions of the Santa Fe, then being appointed superintendent of the Western division of the Missouri Pacific and of the Central Branch Union Pacific (now part of the Missouri Pacific). During 1893 and 1894 he also served as general superintendent of the Kansas City, Wyandotte & Northwestern (now part of the Missouri Pacific). Mr. Rathburn was appointed president of the Atchison Union Depot & Railroad Company on July 27, 1890, retiring as superintendent of the Western division of the Missouri Pacific in 1903.

### Operating

**L. M. Davis** has been appointed traveling chief dispatcher of the Great Northern with headquarters at St. Paul, Minn.

**G. A. McCullough** has been appointed acting car accountant of the Panhandle & Santa Fe, with headquarters at Amarillo, Tex., succeeding **J. D. Sweeney**, who retires on September 1.

**Walter D. Pearce**, assistant superintendent on the Northern Pacific at Duluth, Minn., has been transferred to St.

Paul, Minn., succeeding **J. B. McLane**, who retires on September 1.

**W. T. Niles**, local freight and passenger agent on the Chicago & North Western at Casper, Wyo., has been promoted to trainmaster of the Wyoming division at the same point.

**Christopher T. Sponsel**, assistant to the general superintendent of the Northern Pacific at St. Paul, Minn., has been appointed assistant superintendent of the Lake Superior division, with headquarters at Duluth, Minn., effective September 1.

**J. M. Fryers**, assistant superintendent on the Saskatchewan district of the Canadian Pacific at Wynyard, Sask., has been transferred to the Manitoba district at Minnedosa, Man., succeeding **S. R. Lamb**, who has been transferred to Wynyard.

The headquarters of the operating department of the Seaboard Air Line are to be transferred from Savannah, Ga., to the general office building of this road at Norfolk, Va. The officers affected by this transfer, which will be completed by September 5, are as follows: **W. G. Slaughter**, chief special agent; **W. F. Williams**, superintendent telegraph; **E. C. Bagwell**, general manager; **J. C. Wroton**, general superintendent transportation; **C. E. Hix**, superintendent transportation; **E. Y. Graves**, superintendent stations and transfers; **W. C. Kirby**, general superintendent yards and terminals; **C. D. Thornton**, supervisor of rules; **W. W. Fuller**, safety supervisor, and **C. S. Patton**, general superintendent motive power.

**William H. Strachan**, who has been promoted to assistant general manager of the lines of the Northern Pacific east of Helena, Mont., and Butte, with headquarters at St. Paul, Minn., has been in the service of that railway for 22 years. He was born at Toronto, Ont., on July 22, 1863, and obtained his first railroad experience as a telegraph operator on the Illinois Central in 1879. Later he served as an operator on the Burlington, Cedar Rapids & Northern (now part of the Chicago, Rock Island & Pacific), operator and dispatcher on the Winona & St. Peter (now part of the Chicago & North Western), operator for the Great Northwestern Telegraph Company, dispatcher and chief dispatcher on the Minneapolis, St. Paul & Sault Ste. Marie, chief dispatcher on the Northern Pacific and dispatcher, chief dispatcher and trainmaster on the Wisconsin Central (now part of the Soo Line). In 1903, Mr. Strachan was appointed superintendent of the Minnesota & International, then being appointed assistant superintendent on the Northern Pacific at Duluth, Minn., in 1910. He was promoted to superintendent of the Lake Superior division at Duluth in May, 1914,

being further promoted to general superintendent of the Eastern district at St. Paul in January, 1925. His promotion to assistant general manager becomes effective on September 1.

**James E. Craver**, who has been promoted to general manager of the western lines of the Northern Pacific, with headquarters at Seattle, Wash., has been connected with that road for 43 years. He entered railway service in 1880 as night operator on the Chicago, Burlington & Quincy at West Quincy, Mo. Later he served in the same capacity at Galesburg, Ill., then serving successively from 1886 to 1907 as an operator and dispatcher on the Northern Pacific at Billings, Mont., train dispatcher on the Mobile & Ohio, and dispatcher, chief



James E. Craver

dispatcher and trainmaster on the Northern Pacific. Mr. Craver was then promoted to superintendent of the North Dakota division at Fargo, N. D., being transferred to the Seattle division at Seattle in 1911. He was promoted to general superintendent of the Central district at Livingston, Mont., in October, 1920, after having served for several months as acting general superintendent of the Western district earlier in that year and in 1919. In April, 1924, he was transferred to the Western district with headquarters at Seattle, Wash., his promotion to general manager of the Western lines becoming effective on August 15.

**Thomas F. Lowry**, who has been promoted to assistant general manager of the lines of the Northern Pacific west of Helena, Mont., and Butte, with headquarters at Seattle, Wash., has been connected with American railways for 45 years. He was born at London, Ont., on January 15, 1870, and gained his first railroad experience at the age of 15 years as a messenger on the Canada Southern (now part of the Michigan Central). From 1887 to 1893 Mr. Lowry served as telegraph operator and train dispatcher on the Buffalo, Rochester & Pittsburgh, then becoming a telegraph operator on the Great Northern. On the latter road he was advanced successively to train dispatcher, to trainmaster and to division superintendent at Crookston, Minn.,

then being transferred to Havre, Mont. In 1911, he entered the service of the Northern Pacific as trainmaster at Spokane, Wash., then being promoted to



Thomas F. Lowry

division superintendent at Dilworth, Minn., in 1913. He was later transferred successively to Staples, Minn., to Missoula, Mont., and to Minneapolis, Minn., and on December 1, 1926, he was promoted to general superintendent of the Central district at Livingston, Mont. His further promotion to assistant general manager becomes effective on September 1.

## Traffic

**T. W. Williams** has been appointed general agent of the Chicago, Springfield & St. Louis at Cleveland, Ohio, a newly created position.

**S. W. Hansen**, assistant traffic manager of the Waterloo, Cedar Falls & Northern, has been appointed acting superintendent and traffic manager, with headquarters as before at Waterloo, Iowa.

**H. C. Vincent**, traveling freight and passenger agent for the Atchison, Topeka & Santa Fe at Seattle, Wash., has been promoted to general agent at Portland, Ore., succeeding **H. H. Francisco**, who retired from active service on August 1.

**L. A. Sackbauer**, assistant general freight agent of the Missouri Pacific, has been promoted to assistant coal traffic manager, with headquarters as before at St. Louis, Mo. **J. R. Staley** has been appointed assistant general freight agent at St. Louis, succeeding Mr. Sackbauer.

**O. E. Lowry** has been appointed assistant to the freight traffic manager of the Chesapeake & Ohio with headquarters at Richmond, Va., and **I. B. Middleton**, division freight agent at Huntington, W. Va., has been appointed assistant general freight agent at Richmond, Va., succeeding Mr. Lowry.

**John F. Gaffney, Jr.**, who has been

promoted to general passenger agent of the Nashville, Chattanooga & St. Louis, with headquarters at Nashville, Tenn., has been connected with that company for 28 years. He was born at Nashville on November 25, 1882, and entered railway service in August, 1902, as a file clerk in the passenger department of the N., C. & St. L. Eight years later Mr. Gaffney became secretary to the general passenger agent and in 1911 he was advanced to city ticket agent. In the following year he was promoted to city passenger agent in Nashville, then being further promoted to assistant general



John F. Gaffney, Jr.

passenger agent at Nashville on February 1, 1917. His promotion to general passenger agent became effective on August 15.

**R. J. S. Weatherston**, general freight agent of the Atlantic region of the Canadian National at Moncton, N. B., who has been appointed general freight and passenger agent, with the same headquarters, following the retirement of **F. W. Robertson**, general passenger agent, as announced in the *Railway Age* of August 9, page 305, began his railroad career with the Grand Trunk (now part of the Canadian National), as clerk in the traffic department at Hamilton, Ont., in 1893. In July, 1902, he was appointed soliciting freight agent at Hamilton and a year later was transferred to Toronto, Ont., in the same capacity. In 1906 he went to Ottawa, Ont., as traveling freight agent, and in 1907 returned to Hamilton as chief clerk to the divisional freight agent. In 1911 he was promoted to divisional freight agent at Stratford, Ont., and in 1919 occupied the same position at Ottawa. Four months later he was transferred to Hamilton in the same capacity and on April 1, 1927, he was appointed general freight agent of the Atlantic region, with headquarters at Moncton.

Mr. Robertson, who has retired because of ill health, entered railroad service with the Intercolonial & Prince Edward Island Railways (now part of the Canadian National system), on May 20, 1886, in the car mileage office at Moncton as junior clerk. He was later transferred to the office of the general superintend-

ent at Moncton and then to the general passenger agent's office. In November, 1901, he was appointed private secretary to the general manager and in September, 1902, became secretary to the general passenger and ticket agent. On February 4, 1913, he was promoted to chief clerk and on December 1, 1915, he became district passenger agent at Halifax. In October, 1916, he was appointed acting superintendent of parlor, sleeping and dining cars, with headquarters at Halifax, and was made superintendent on November 1, 1917. His appointment as general passenger agent with headquarters at Moncton became effective November 1, 1920, and when he retired on August 1, this position was abolished.

## Engineering, Maintenance of Way and Signaling

**E. R. Parke**, division engineer in the office of the chief engineer of the Pennsylvania, with headquarters at Philadelphia, Pa., has been transferred to the Sunbury division, with headquarters at Sunbury, Pa., where he succeeds **F. R. Rex**, who has been transferred to the Williamsport division, with headquarters at Williamsport, Pa. Mr. Rex relieves **N. D. Vernon**, who has been transferred to the Elmira division, with headquarters at Elmira, N. Y., where he replaces **David Davis, Jr.**, who has been transferred to the office of the chief engineer, with headquarters at Philadelphia. **L. B. Young** division engineer of the Monongahela division, with headquarters at Uniontown, Pa., has been appointed division engineer of the Schuylkill division, a newly created position.

**K. B. Duncan**, district engineer of the Gulf, Colorado & Santa Fe, has been promoted to chief engineer, with headquarters as before at Galveston, Tex., succeeding **Frank Merritt**, deceased. **W. W. Wilson**, division engineer of the Southern division at Temple, Tex., has been promoted to district engineer to replace Mr. Duncan. **J. C. Starkie** has been appointed division engineer of the Southern division at Temple to succeed Mr. Wilson.

Mr. Duncan has been connected with the Santa Fe for about 23 years. He was born at Princeton, Ind., on September 5, 1878, and graduated from the high school in that city in 1896. In 1902 he graduated from a course in civil engineering at Purdue University, following a year at Wabash College, two years as an instrumentman on the Big Four at Mt. Carmel, Ill., and several months' practical experience in highway engineering. For a short period after graduation from college Mr. Duncan was engaged in irrigation investigations in California, entering the service of the Santa Fe in 1903 as a draftsman in the office of the chief engineer at Galveston. Later he was transferred to Cleburne, Tex., and from July, 1904, to June, 1905, he served as an instructor in hydraulic and structural engineering at Purdue University. For the following



three years he was a resident and division engineer on construction on the Houston & Texas Central (now part of the Southern Pacific), returning to the Santa Fe in 1908 as office engineer for the chief engineer of the Gulf lines at Galveston. In 1911 he was transferred to the office of the chief engineer of the system at Topeka, Kan., and in 1913 he was appointed engineer of the Gulf lines at Galveston, supervising the construction of buildings and field in-



K. B. Duncan

vestigations. Mr. Duncan was promoted to valuation engineer of the Eastern lines of the Santa Fe at Topeka in 1915 and during federal control of the railroads he served as bridge engineer of Group Six, Southwestern region, United States Railroad Administration. He was promoted to district engineer of the Gulf, Colorado & Santa Fe at Galveston in March, 1919, a position he held until his further promotion to chief engineer of that road.

## Mechanical

**Donald M. Smith**, division master mechanic on the Alberta district of the Canadian Pacific at Medicine Hat, Alta., has been transferred to Edmonton, Alta., succeeding **J. W. Jackson**, who has been transferred to Medicine Hat.

## Purchases and Stores

**C. J. Irwin**, division storekeeper on the Gulf, Colorado & Santa Fe at Temple, Tex., has been promoted to purchasing agent and storekeeper, with headquarters at Cleburne, Tex., succeeding **E. S. Newton**, deceased. **H. W. Hughes**, chief clerk in the purchasing department at Cleburne, has been promoted to division storekeeper at Temple, succeeding Mr. Irwin.

## Obituary

**Charles Molony**, president and general manager of the Wrightsville & Tennille, the Louisville & Wadley, the Wadley

Southern and the Sylvania Central, with headquarters at Savannah, Ga., died at the Central of Georgia hospital in that city on August 2 at the age of 59 years.

**F. H. Benjamin**, who for 27 years prior to his recent retirement, was master of trains on the Louisville & Nashville, at Nashville, Tenn., died at his home at Brentwood, Tenn., on August 24, at the age of 70 years.

**James J. Connelly**, formerly superintendent of the Montreal division of the Canadian National, died at St. Lambert, Que., on August 21, at the age of 57 years. Prior to his retirement in March, 1928, Mr. Connelly had spent nearly 25 years in the service of the Canadian National and its predecessors.

**Stewart J. Alton**, manager of the rate and tariff bureau of the Canadian National, died on August 18 at Montreal, Que. Mr. Alton began railway service with the Canadian Pacific in the freight office at Toronto, Ont., and in 1909 became connected with the Canadian National, holding various positions in the freight tariff department of that road, at Winnipeg, Man. In 1918, when the Canadian Northern was taken over by the Canadian National, he was transferred to Toronto as assistant to the freight traffic manager, and after the consolidation of the Canadian National and the Grand Trunk railways, he was appointed tariff assistant to the vice-president in charge of traffic with headquarters at Montreal. He was promoted to the position of manager of the rate and tariff bureau in January, 1927, in which capacity he served until his death.

**Frank Merritt**, for nearly 21 years chief engineer of the Gulf, Colorado & Santa Fe, with headquarters at Galveston, Tex., died in that city on August 3. Mr. Merritt was born at Scituate, Mass., on June 11, 1856, and graduated from



Frank Merritt

Tufts College in 1879. Two years later he entered railway service as an axman on location on the Atchison, Topeka & Santa Fe. Later he left railroad work to spend several years in land surveying

and city and hydraulic engineering work. About 1890 he returned to railway service as a levelman on the Gulf, Colorado & Santa Fe, then serving that road successively as transitman and as an engineer on maintenance of way, construction and reconnaissance and location. He was advanced to resident engineer in connection with construction and reconnaissance and location, with headquarters at Cleburne, Tex., in 1900. Mr. Merritt had been chief engineer of the Gulf, Colorado & Santa Fe since November 10, 1909.

**John Henry Redan Parsons**, who retired as passenger traffic manager of the Southern Pacific on July 1, 1925, died at his home at San Francisco, Cal., on August 13 after an illness of more than a year. At the time of his retirement Mr. Parsons had been in railway service for 45 years, more than 16 of which were spent with the Southern Pacific. He was born at Quebec, Que., on August 3, 1861, and obtained his first railway experience in January, 1880, as a clerk in the office of the treasurer of the Chicago & Grand Trunk (now part of the Grand Trunk Western) at Port Huron,



John Henry Redan Parsons

Mich. Later he was transferred to Detroit, Mich., and in April, 1886, he became connected with the stationery department of the Union Pacific at Omaha, Neb., where he subsequently served in the auditing and passenger departments. In July, 1906, he was appointed chief clerk to the assistant director of traffic of the Union Pacific and the Southern Pacific at Chicago, where he remained until January, 1909, when he was promoted to general passenger agent of the Southern Pacific lines in Louisiana, with headquarters at New Orleans, La. On January 1, 1917, Mr. Parsons was elected vice-president of the Louisiana lines, then becoming assistant passenger traffic manager of the Southern Pacific system on March 1, 1923, with headquarters at San Francisco. He was promoted to passenger traffic manager, with the same headquarters, on October 1, 1923, his retirement from active service because of ill health becoming effective on July 1, 1925.